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Factors that Could Lead to Increase in the Number of Coronavirus Infections in INDIA

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Abstract

Corona virus precisely COVID- 19 that started in Wuhan (China) as its epicenter has been exponentially spreading around the whole wide world lately. The source that researchers and medical officers have boiled down to is, the wet market in Wuhan which serves dead and live animals and birds. This market in Wuhan is believed to be densely packed, hence the spread of the virus was easier. The source of this virus is still in question, but it is believed that bats may have acted as carriers of the virus. Since they also host other viruses like Ebola, HIV, rabies etc. It is spreading at exponential rates. Awareness about this virus is crucial, for any country to stop this virus. Hence, the topic 'factors that could lead to increase in the number of coronavirus infections' was chosen for my research. My research work has been divided into 3 phases; each dealing with separate factors. Phase 1 dealt with factors that could affect the death/ infection numbers of coronavirus. Regression analysis was done between different factors to find relevance of the factors with respect to increase in the number of infections due to coronavirus or death rates. The second phase dealt with government initiatives, how different governments initiatives have dealt with the virus. For this phase, data was collected about the initiatives taken by 4 countries namely Iran, Italy, China, and India, and then the data was compared. Phase 3 dealt with the awareness factor. For this factor, MBA graduates or people doing MBA in India were chosen to test their awareness related to this deadly virus. This research work mostly focusses on India but draws inspiration from other countries as well.

Keywords: *COVID 19, Health, Pandemic*

I. INTRODUCTION

Coronavirus is a virus that is believed to have come from the wet markets of Wuhan in China but has become a global pandemic by affecting. This topic was chosen for my research because even after two countries like Italy and China were on their knees because of this virus, when the virus entered India, people still couldn't figure out the factors because of which the infections and death rates are rising in different countries. Hence a research was conducted on what factors affect the death and infection rates of coronavirus. Many educational institutions and commercial places have been shut down by government actions in India due to the coronavirus. But the awareness that is expected out of people is still missing. The reasons given by people for not following the required steps for prevention of coronavirus are not scientific. Hence, research work was conducted on this disease. This disease is believed to spread in people in phases. India is believed to be in the second phase of coronavirus right now. If it gets to the third or fourth phase, it will be a very dangerous task to control the same in the country. The preventive measures taken in other parts of the world might not work in India, since there are a lot of cultural and population difference in these countries. Helpline and toll free numbers have been released for people infected with corona virus in almost every country across the globe. Maharashtra in India is the worst hit by coronavirus. Although there is screening at the airports but since detection of coronavirus is so difficult because at times it shows symptoms even on the 13th or 14th day of contact with an infected person that it has become difficult to detect coronavirus positive people. The centre has also relaxed leave rules and regulations for the people above the age of 50 years. Central government employees are allowed to go on leave without any documentation to prevent the burden on Indian

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healthcare systems. Only time will tell, if these measures will prevent India from stepping into step 3.

II. DATA AND METHODOLOGY

There are three phases to the data that was collected. Firstly, when It came to secondary data, data collection was done in real time, which was collected from trusted websites. This data was about eight countries; China, South Korea, Italy, Germany, USA, Iran, India and Pakistan. These countries were chosen out of the 189 countries infected based on certain factors. Iran and Italy were chosen because these two countries showed the highest number of cases outside China (which was the epicenter of this virus). China was chosen since it was the epicenter ways had to be analyzed about how they had flattened the curve with strict measures. South Korea was chosen for a similar reason, coronavirus is still lurking in South Korea, but to a greater extent they have flattened the curve. Germany was chosen for this study because another country was required from Europe to compare it with the preventive measures that Italy took. United States of America was chosen because it is the commercial center of the world. India was the main country of study. Pakistan was chosen to find out how a country with almost equal socioeconomic factors like India was dealing with the virus.

A. *Phase: 1*

Below listed attributes were found out for each of these countries:

1. Number of COVID-19 tests performed by the country.
2. The total population of the country.
3. Total number of infections in the country.
4. Total number of deaths in the country.
5. Total number of recovered patients in the country.
6. No of hospital beds per 1000 people in the country.
7. Urban population of the country.
8. Literacy rate of the country.
9. What percentage of GDP does this country spend it healthcare?
10. Median age of people in the country

I. Table: Number of tests performed/ population/ number of infections (in the country)

Country	No of Covid-19 tests performed by the country	Population	No of infections
China	320000	1386400000	81,008
South korea	316664	51500000	8799
Italy	206886	60500000	47021
Germany	167000	82800000	19910
USA	103945	327200000	19774
Iran	80000	81200000	20610
India	14514	1339200000	275
Pakistan	1979	197000000	534

II. Table: Number of deaths, Number of people recovered, number of hospital beds per 1000 people (in the country)

Country2	No of deaths	Recovered	No of hospital beds/ 1000 people
China	3255	71740	4.34
South korea	102	2612	12.27
Italy	4032	5129	3.18
Germany	68	180	8
USA	275	147	2.77
Iran	1556	7635	1.5
India	5	23	2
Pakistan	3	13	0.6

III. Table: Percentage of urban population, percentage of literacy rate, percentage of GDP spent in healthcare, average age of people (in the country)

Country3	Urban population	Literacy rate	Percentage of GDP in healthcare	Median age of people in these country
China	59%	96.40%	6.57%	38.4
South korea	62%	97.90%	8.10%	43.7
Italy	70%	99.20%	8.80%	45.5
Germany	77%	99.70%	11.10%	45.7
USA	82%	99%	17.80%	38.2
Iran	75%	86.80%	6%	32
India	34%	71.20%	1.28%	29
Pakistan	37%	57.90%	0.97%	22.8

Based on the listed factors following regression analysis were conducted:

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I. Regression between median age of the country and no of deaths due to coronavirus that took place in the country. (Refer table II & III)

It was to be checked if the number of deaths in a country due to coronavirus depended on median age of the country, hence a regression analysis between factor number 10 and factor number 4.

The summary output found out from the regression analysis is given in Table IV:

Multiple R is called the coefficient co-efficient and R square is called the coefficient of determination. These Multiple R value determines how strong is the linear relationship between the variables that we have taken and R square determines how much percentage of the variance of the output variable is explained by the input variable. P value was also considered for calculations, here, the smaller the p value the greater is the instance that our output hasn't been obtained by chance.

For the previous case, R square is equal to 12.3% which means 12.3% of variation in deaths can be explained by the median age of the country.

Multiple R is 35.1% which shows, the number of deaths are 35.1% linear to the median age of the country. The p value is 0.393. There is a 39.3% chance that our values have been obtained by chance.

II. Regression analysis between percentage of GDP spent on healthcare and number of COVID-19 tests conducted in the country (Refer table I & III)

To check if there was a relation between the percentage of GDP spent of healthcare and the number of COVID-19 tests that were done by the country a regression analysis was performed between the two.

The summary output found out from the regression analysis is given in Table V:

In this case, the multiple R is 32.2%. This tells the relationship between the number of tests performed and the percentage of GDP spent on health care is 32.2% strong. Also, the variance in the COVID-19 tests is explained only 10.4% by the percentage of GDP spent on healthcare. The P value is 0.43 which shows that the result that we obtained was 43.5% by chance.

III. Regression between population of the country and number of infections due to coronavirus in the country (Refer table I)

To check if there was a relation between the population of a country and the number of COVID-19 infections in the country a regression analysis was performed between the two.

The summary output found out from the regression analysis is given in Table VI:

In this case, the multiple R is 35.2%. This tells the relationship between the population of the country and the infections due to coronavirus in the country is 35.2% strong. Also, the variance in the COVID-19 infections is explained only 12.4% by the population of the country. The P value is 0.39 which shows that the result that we obtained was 39.19% by chance.

IV. Regression analysis between percentage of urban population and the infections due to coronavirus (Refer table I & III)

To check if the percentage of urban population was in anyway related to the number of infections in the country a regression analysis between the two was performed.

The summary output found out from the regression analysis is given in Table VII:

In this case, the multiple R is 31.3%. This tells the relationship between the infections in the country and the urban population in the country is 31.3% strong. Also, the variance in the COVID-19 infections is explained only 9.8% by the urban population of the country. The P value is 0.44 which shows that the result that we obtained was 44.99% by chance.

V. Regression analysis between percentage of literate population and the infections due to coronavirus (Refer table I & III)

To check if the percentage of literate population was in anyway related to the number of infections in the country a regression analysis was performed between the two.

The summary output found out from the regression analysis is given in Table VIII:

In this case, the multiple R is 53.3%. This tells the relationship between the infections in the country and

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the literate population in the country is 53.3% strong. Also, the variance in the COVID-19 infections is explained 28.4% by the literate population of the country. The P value is 0.17 which shows that the result that we obtained was 17.37% by chance.

B. *Phase: 2*

The second phase of research involved focusing on the detailed analysis of the infections and deaths in different countries that were chosen carefully to formulate a preventive strategy for India.

The countries that were chosen for this section of the research were; India, Iran, China and Italy. China was chosen since it was the epicenter of the virus. Iran and Italy were chosen since they had the highest number of cases outside china and India; since was in phase 2 and could be prevented from the virus with the comparative analysis of the data from other countries.

For the data related to the countries chosen refer table IX, X, XI and XII.

There are four stages of coronavirus:

1. Where it infects people who have travelled to the countries that have been infected by the virus.
2. Local transmission: From person to person
3. Community transmission: Even without being in contact with an infected person you might test positive.
4. When it turns into and epidemic and the severity increases.

India is currently in stage 2, and this virus can be stopped at this stage itself by not repeating the mistakes the other countries made.

C. *Phase: 3*

The third part of the research involved knowing about the awareness levels in India about the coronavirus. For this a survey was circulated, and the target audience were mostly MBA graduates or people who were pursuing a degree in MBA. Since these people were considered to know the current situation of the world and hence the survey wanted to test their levels of awareness about the coronavirus(India).

The survey was conducted over 179 respondents.

The following were the questions asked:

1. The Coronavirus cannot spread in hot or humid areas?
   - **a.** True
   - **b.** **<u>False</u>**

69.3% respondents marked the correct answer.

2. Spraying alcohol or chlorine all over your body kills the coronavirus?
   - **a.** True
   - **b.** **<u>False</u>**

73% respondents marked the correct answer.

3. Is your cleaning lady/ maid/ cook/ driver (any human support) aware about the precautionary measures that should be taken for Coronavirus?
   - **a.** This was an open ended question to know more about the respondent.

Out of 41 people who wrote answers for this question, 11 respondents said yes there cleaning lady/ human support was aware about precautionary measures that must be taken for coronavirus.

4. Are you aware of specific medicine that can be taken to prevent / treat coronavirus?
   - **a.** Yes
   - **b.** **<u>No</u>**

88.8% respondents marked the correct answer.

5. Are you aware of the coronavirus test centres near you?
   - **a.** **<u>Yes</u>**
   - b. No

64.8% respondents were aware of any test centre around them.

6. What do antibiotics work against?
   - **a.** **<u>Bacteria</u>**
   - b. Virus

83.8% respondents marked the correct answer.

7. Does the coronavirus only infect older people or are younger people also susceptible?
   - a. Only older people
   - **b.** **<u>It doesn't leave anybody from it's gamut</u>**

95.5% respondents marked the correct answer.

8. Can eating garlic help prevent infection from coronavirus?
   - a. Yes

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b. <u>No</u>

85.5% respondents marked the correct answer.

9. Can regularly rinsing your nose with saline help prevent infection with the new coronavirus?
   a. Yes
   b. <u>No</u>

71.2% respondents marked the correct answer.

10. Ordering or buying products shipped from China will make a person sick.
    a. True
    b. <u>False</u>

84.9% respondents marked the correct answer.

11. A face mask will protect you from COVID-19.
    a. True
    b. <u>False</u>

48.6% respondents marked the correct answer.

12. Symptoms of coronavirus include:
    a. <u>Cough</u>
    b. <u>Fever</u>
    c. <u>Shortness of breath</u>
    d. Stomach pain
    e. Hairfall

97.2% respondents marked the correct answer.

13. Are you aware of anybody who has been infected with coronavirus around you?
    a. Yes
    b. No

7 people said they were aware of infected patients.

14. Will India be able to come out of these unfortunate circumstances? How, any suggestions for the government or people to incorporate?
    a. This was an open ended question to check the responses and ideas that come from the respondents.

There were 126 responses for this question; which suggested better ways of sanitization, mandatory quarantine and tag people who have been detected positive by a mark just like how a person is marked after he votes.

Leaving the open ended question, every question carried 5 marks. This survey gave marks for right answers out of 60.

The median points respondent scored were 45.

III. RESULTS

A. *Results for PHASE 1:*

1. Regression between median age of the country and no of deaths due to coronavirus that took place in the country. Refer table I, III and IV

For this case, R square is equal to 12.3% which means 12.3% of variation in deaths can be explained by the median age in the country. Multiple R is 35.1% which shows, the number of deaths are 35.1% linear to the median age. The p value is 0.393. There is a 39.3% chance that our values have been obtained by chance. This means that the median age of the population although is a sign of how old the population is overall but there might be other factors as well that govern, the death cases due to coronavirus in the country.

2. Regression analysis between percentage of GDP spent on healthcare and number of COVID-19 tests conducted in the country. Refer table I, III and V

In this case, the multiple R is 32.2%. This tells the relationship between the number of tests performed and the percentage of GDP spent on health care is 32.2% strong. Also, the variance in the COVID-19 tests is explained only 10.4% by the percentage of GDP spent on healthcare. The P value is 0.43 which shows that the result that we obtained was 43.5% by chance. This result shows that although the percentage of GDP spent in healthcare is a good sign of a healthy or an unhealthy economy but it doesn't necessarily denote the number of deaths due to coronavirus.

3. Regression between population of the country and number of infections due to coronavirus in the country. Refer table I and VI

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In this case, the multiple R is 35.2%. This tells the relationship between the population of the country and the infections due to coronavirus in the country is 35.2% strong. Also, the variance in the COVID-19 infections is explained only 12.4% by the population of the country. The P value is 0.39 which shows that the result that is obtained was 39.19% by chance. The population of a country didn't exactly show a linear relation with the number of infections the country had. A better measure would be population density for the same. With the population, an infection spreads if the proximity of people to each other is more, which would happen if population density is high.

4. Regression analysis between percentage of urban population and the infections due to coronavirus. Refer table I, III and VII

In this case, the multiple R is 31.3%. This tells the relationship between the infections in the country and the urban population in the country is 31.3% strong. Also, the variance in the COVID-19 infections is explained only 9.8% by the urban population of the country. The P value is 0.44 which shows that the result that we obtained was 44.99% by chance. My hypothesis while testing this regression was, if the population percentage is more urban, it'll have lesser infections due to coronavirus, since they would be more aware. But clearly there are other factors involved with the same hypothesis.

5. Regression analysis between percentage of literate population and the infections due to coronavirus. Refer table I, III and VIII

In this case, the multiple R is 53.3%. This tells the relationship between the infections in the country and the literate population in the country is 53.3% strong. Also, the variance in the COVID-19 infections is explained 28.4% by the literate population of the country. The P value is 0.17 which shows that the result that we obtained was 17.37% by chance. This shows that there is a considerable amount of relation between, literacy rates and the number of infections in a population. If the population is more literate, they take preventive measures against the coronavirus than when the population is illiterate.

B. *Results for PHASE 2:*

In china the president addressed the country 9 weeks after the virus had already turned into an epidemic. There are several immeasurable factors that also help in controlling this virus, like global support, the support of citizens towards governments, the intensity of government response, cultural buy-in of social distancing, etc. China and Iran downplayed the situation and even tried to cover it up which led to the ballooning of the numbers. India has a chance to remain transparent and control the numbers with co-operation from the community. There were certain things that India can take notes from the Chinese way of dealing with the virus. The measures they took were very stringent. Free check-ups were done at the clinics for the people. Considering the population of India, with a 3 trillion-economy, the people will need free check-ups. These measures if taken by government of India will help the country fight against the virus. Slow response was also a reason for the cases in Wuhan and Iran to blow out of proportions, India currently has a responsive strategy, it should continue the same with stricter measures. The worst thing Iran did was shrines continued to remain open even after the cases started increasing. The government itself called the virus; a biological warfare from US against Iran. Governments play a crucial role in fighting this virus, the role of a government is to guide the public and not misguide them. Italy, took precautions like international flights ban and thermal scanners at strategic locations at the very outset of the virus. But speed was a factor that made the coronavirus go out of control. Despite spending 8.8% of its GDP on healthcare its unable to take control of the situation because there has not been any quick fix developed for the situation in Italy yet. There was a mass distribution of masks and sanitizers in local trains in Italy. The lockdown initiative which should have been taken place way more earlier in these countries took place at a later stage and hence the virus couldn't be controlled. The lockdown in India if undertaken with stricter measures can prevent India from going into Stage 3.

C. *Results for PHASE 3:*

The results showed that although the people were moderately aware about the corona virus, but a higher

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score was expected out of MBA graduates who know more than the rural poor. Some of the questions that went wrong were,

1. A face mask will protect you from coronavirus.

51.4% of respondents answered a yes for this question, which was clearly wrong. There are no findings yet that a face mask will protect you against coronavirus.

2. Can regularly rinsing your nose with saline help prevent infection with the new coronavirus?

51 respondents out of 179 responded yes to this question. These answers show that there are myths prevalent in all stratas of the society.

3. Are you aware of the coronavirus test centres near you?

When asked this question, 63 respondents said they did not know any test centers near them.

4. Are you aware of specific medicine that can be taken to prevent / treat coronavirus?

20 people out of 178 respondents said they knew of some medicine that could treat it. People weren't aware about the same.

5. Coronavirus cannot spread in hot or humid areas?

55 people said yes to this question. They were wrong. Coronavirus can spread in hot and humid or cold climates at same levels.

6. Spraying alcohol or chlorine all over your body kills the coronavirus?

48 respondents out of 179 answered yes to this question. The answer to this question is no. this shows awareness missing in the people. Hence measures should be taken to increase awareness.

IV. DISCUSSION

The results of phase 1 and phase 3 clearly point out to literacy as a long term goal and awareness as a short term goal in India to fight the coronavirus. Intensive awareness campaigns have to be launched to not only educate the rural poor but also to educate the people who are well off but take this virus as a flu (which it clearly isn't; that's what the death toll tells). Government of India has already launched a helpline number. Companies like google, coca-cola and many other commercial companies are also coming forward at a global scale to spread awareness about this deadly disease. What's required now is awareness to be spread from human to human before the virus transmits from human to human.

V. CONCLUSION, LIMITATIONS AND FUTURE SCOPE:

To start with; awareness should be the starting point, because India is still in stage 2. But at a global level everybody has to come forward and support the governments and healthcare staff who are trying hard to fight with this virus, by not just socially distancing themselves from people but physically distancing themselves from people. On a longer term note, literacy and healthcare should be a key factor the government should be working on.

The limitations of this research work include, no availability of prior secondary research papers to get a direction about this topic.

The way forward is to know are there any measures to tap the immeasurable factors that have been listed in this research paper, that affect the infections and their rate. Also, the way forward will be to test how aware are people after the infections increase or decrease in India in the future.

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VII. TABLES AND FIGURES

IV Table: Regression between median age of the country and no of deaths due to coronavirus that took place in the country. (Refer table II & III)

Column1	Column2	Column3	Column4	Column5
SUMMARY OUTPUT				
Regression Statistics				
Multiple R	0.35120294			
R Square	0.123343505			
Adjusted R Square	-0.022765911			
Standard Error	1646.836752			
Observations	8			
ANOVA				
	df	*SS*	*MS*	*F*
Regression	1	2289492.272	2289492.272	0.844185874
Residual	6	16272427.73	2712071.288	
Total	7	18561920		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-1369.417995	2815.998145	-0.486299324	0.64400578
Average age of people in these country	68.57888236	74.63995392	0.918795883	0.393639089

V Table: Regression analysis between percentage of GDP spent on healthcare and number of COVID-19 tests conducted in the country. (Refer table I & III)

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.322613401							
R Square	0.104079407							
Adjusted R Square	-0.045240692							
Standard Error	126681.1366							
Observations	8							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			

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Regression	1	11185887362	11185887362	0.697022086	0.435761118			
Residual	6	96288662174	16048110362					
Total	7	1.07475E+11						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	95467.38403	80561.03831	1.185031698	0.280809529	-101658.3754	292593.1434	-101658.3754	292593.1434
Percentage of GDP in healthcare	737791.0389	883710.6854	0.834878486	0.435761118	-1424571.11	2900153.188	-1424571.11	2900153.188

VI Table: Regression between population of the country and number of infections due to coronavirus in the country (Refer table I)

Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.352392914							
R Square	0.124180766							
Adjusted R Square	-0.021789107							
Standard Error	27460.94858							
Observations	8							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	641537687.7	641537687.7	0.85072874	0.391925988			
Residual	6	4524622180	754103696.7					
Total	7	5166159868						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	17424.02076	12538.00458	1.389696474	0.213992611	-13255.37124	48103.41275	-13255.37124	48103.41275
Population	1.6603E-05	1.80008E-05	0.922349576	0.391925988	-2.74433E-05	6.06493E-05	-2.74433E-05	6.06493E-05

VII Table: Regression analysis between percentage of urban population and the infections due to coronavirus (Refer table I & III)

Column1	**Column2**	**Column3**	**Column4**	**Column5**	**Column6**	**Column7**	**Column8**	**Column9**
SUMMARY OUTPUT								

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Regression Statistics								
Multiple R	0.31325391							
R Square	0.098128012							
Adjusted R Square	-0.052183986							
Standard Error	27866.39215							
Observations	8							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	506944998.1	506944998.1	0.652828872	0.449941515			
Residual	6	4659214870	776535811.6					
Total	7	5166159868						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-4519.410589	37531.05392	-0.120417897	0.908083296	-96354.5912	87315.77002	-96354.5912	87315.77002
Urban population	47194.81547	58410.99653	0.807978262	0.449941515	-95731.74417	190121.3751	-95731.74417	190121.3751

VIII Table: Regression analysis between percentage of literate population and the infections due to coronavirus.

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.533003406							
R Square	0.284092631							
Adjusted R Square	0.164774736							
Standard Error	24827.71274							
Observations	8							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	1467667947	1467667947	2.380972535	0.1737648			
Residual	6	3698491921	616415320.1					
Total	7	5166159868						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-56561.83638	53416.45375	-1.058884153	0.330407567	-187267.1901	74143.51734	-187267.1901	74143.51734
Literacy rate	91855.06158	59528.63165	1.54304003	0.1737648	-53806.25269	237516.3759	-53806.25269	237516.3759

IX Table: Data about china's per day number of infections/ deaths & actions or inactions taken by the government

China:

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The blue highlighted sentences show what India can learn from China and apply in it's country. The red highlighted text shows the mistakes that China made while dealing with this deadly virus.

Column1	Column2	Column3	Column4	Column5	Column6	Column7
Day	Day no.	Infections	Deaths			
Dec-31	1	1		China alerted WHO about sudden pneumonia		
Jan-01	2			Huanan market shutdown		
Jan-02	3			The virus started way back on 1 dec.		
Jan-03	4					
Jan-04	5					
Jan-05	6			SARS ruled out		
Jan-06	7					
Jan-07	8	7				
Jan-08	9					
Jan-09	10					
Jan-10	11					
Jan-11	12		1	First death		
Jan-12	13					
Jan-13	14					
Jan-14	15			China was criticized for its initial cover-ups and downplaying of the situation		
Jan-15	16			Free treatments of all cases at the fever clinics.		
Jan-16	17					
Jan-17	18		2	Second death		
Jan-18	19					
Jan-19	20			Despite the outbreak a potluck was conducted of 40000 families.		
Jan-20	21	200		Human to human transmission confirmed		
Jan-21	22			Mayor of Wuhan was criticized because of his slow response		
Jan-22	23	550	17	Wuhan was still an open city (no masks)		
Jan-23	24			Chinese new year celebrations were cancelled		
Jan-24	25	830	26	13 cities lockdown. Landmarks lockdown		
Jan-25	26			Travel restrictions on further five cities.		
Jan-26	27	2000	56			
Jan-27	28	4515	106			
Jan-28	29			President met Tedros (WHO)		
Jan-29	30			All Hubei cities quarantined.		
Jan-30	31	7711	170			
Jan-31	32	9809				
Feb-01	33	11791	259			
Feb-02	34	14380	304			
Feb-03	35	17,205	361			
Feb-04	36	20438	425			
Feb-05	37	24324	490			
Feb-06	38	28000	563			
Feb-07	39	31161	636			
Feb-08	40	34546	722			
Feb-09	41	37198	811			

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Feb-10	42	40171	908	Xi Jinping appeared in public for the first time		
Feb-11	43	42638	1016			
Feb-12	44	44653	1113			
Feb-13	45	60000	1300			
Feb-14	46		1400			
Feb-15	47	66492	1500			
Feb-16	48	68500	1665			
Feb-17	49	70548	1770			
Feb-18	50	72436	1868	Daily infection figures drop below 2000 for the first time.		
Feb-19	51	74185	2004	Daily infection figures drop below 2000 for the second time.		
Feb-20	52	74576	2118			
Feb-21	53	75400	2236			
Feb-22	54					
Feb-23	55					
Feb-24	56	77262	2595			
Feb-25	57	77780	2666			
Feb-26	58					
Feb-27	59					
Feb-28	60					
Feb-29	61					
Mar-01	62					
Mar-02	63					
Mar-03	64					
Mar-04	65					
Mar-05	66	80409				
Mar-06	67	80552				
Mar-07	68	80651				
Mar-08	69					
Mar-09	70					
Mar-10	71					
Mar-11	72					
Mar-12	73					
Mar-13	74					
Mar-14	75					
Mar-15	76					
Mar-16	77					
Mar-17	78					
Mar-18	79			No new infected cases		
Mar-19	80			No new infected cases		
Mar-20	81					
Mar-21	82					

Here's a graph that shows how the number of infections grew due to the downplaying of this virus by the Chinese government.
Fig: I Infections and deaths in China due to Covid-19 (a timeline)

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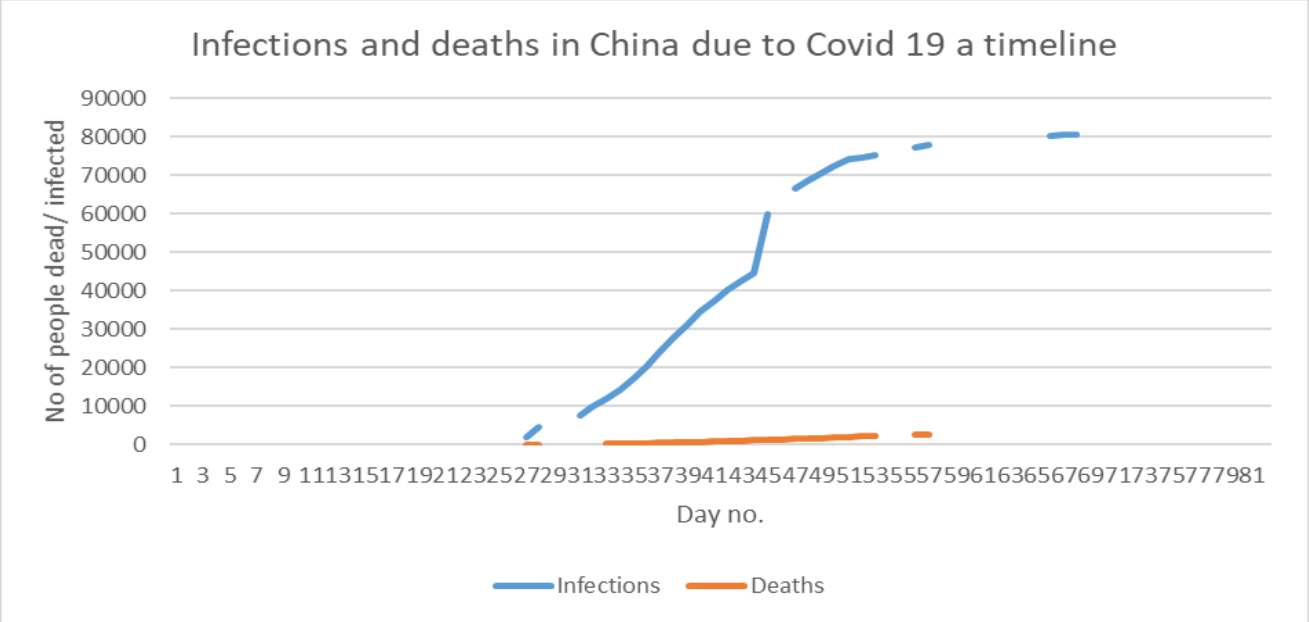

Iran:

The blue highlighted sentences show what India can learn from Iran and apply in it's country. The red highlighted text shows the mistakes that Iran made while dealing with this deadly virus.

X Table: Data about Iran's per day number of infections/ deaths & actions or inactions taken by the government

Column1	Column2	Column3	Column4	Column5	Column6
Day	Day no.	Infections	Deaths		
Dec-31	1				
Jan-01	2				
Jan-02	3				
Jan-03	4				
Jan-04	5				
Jan-05	6				
Jan-06	7				
Jan-07	8				
Jan-08	9				
Jan-09	10				
Jan-10	11				
Jan-11	12				
Jan-12	13				
Jan-13	14				
Jan-14	15				
Jan-15	16				
Jan-16	17				
Jan-17	18				
Jan-18	19				
Jan-19	20				
Jan-20	21				

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Jan-21	22			Decision to go ahead with the parliament election	
Jan-22	23				
Jan-23	24				
Jan-24	25				
Jan-25	26				
Jan-26	27				
Jan-27	28				
Jan-28	29				
Jan-29	30				
Jan-30	31				
Jan-31	32				
Feb-01	33				
Feb-02	34				
Feb-03	35				
Feb-04	36				
Feb-05	37				
Feb-06	38				
Feb-07	39				
Feb-08	40				
Feb-09	41				
Feb-10	42				
Feb-11	43				
Feb-12	44				
Feb-13	45				
Feb-14	46				
Feb-15	47				
Feb-16	48				
Feb-17	49				
Feb-18	50				
Feb-19	51	2	2		
Feb-20	52	5	4	Shrines remained open	
Feb-21	53	18	6		
Feb-22	54	29	8	Cultural, education, sports institutions and events were shut and cancelled.	
Feb-23	55	43	8	First COVID test kit created	
Feb-24	56	61	12		
Feb-25	57	95	15	Told the citizens that coronavirus was a iologial warfare from US to Iran. Whoever spreads rumors will be punished	
Feb-26	58	139	19	Areas were not quarantined only individuals were quarantined: Rouhani	
Feb-27	59	265	26	Shrine visits encouraged as a source of healing	
Feb-28	60	408	34		
Feb-29	61	613	43		
Mar-01	62	998	54		
Mar-02	63	1521	66	mobilise 300000 soldiers to combat virus	
Mar-03	64	2356	77	Member of parliaments were dying due to this virus	

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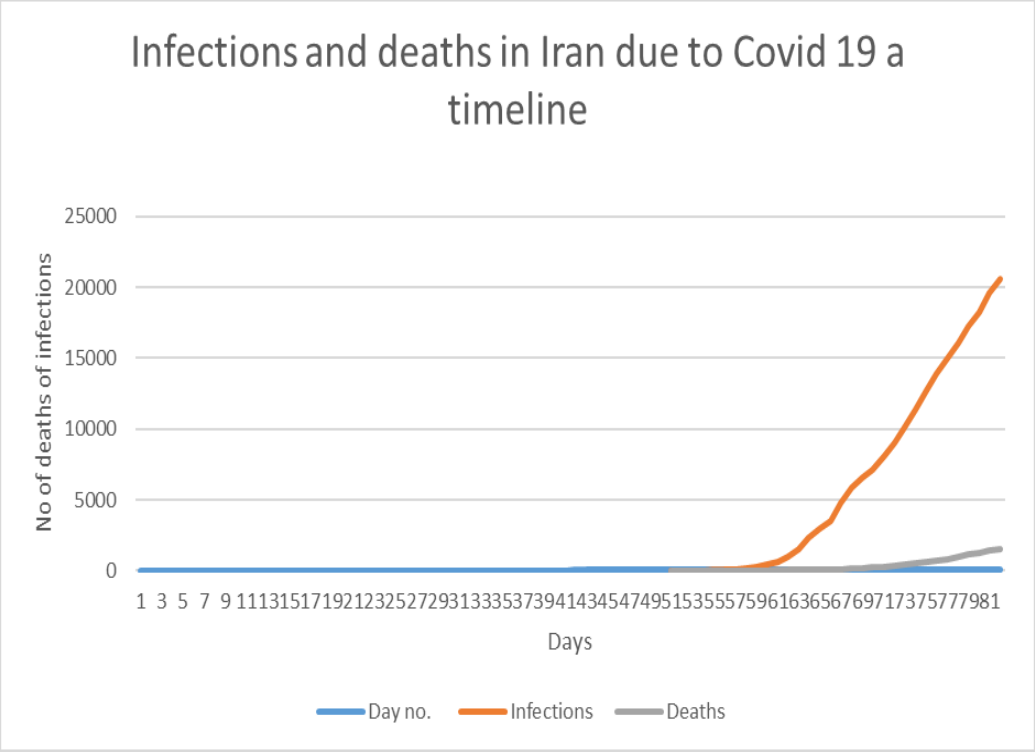
Mar-04	65	2942	92		
Mar-05	66	3533	107	Citizens were advised to avoid using bank notes.	
Mar-06	67	4767	124		
Mar-07	68	5843	145	70000 prisoners released	
Mar-08	69	6586	194		
Mar-09	70	7181	237		
Mar-10	71	8062	291	Iran requested 5 bn $ from IMF	
Mar-11	72	9020	354		
Mar-12	73	10095	429		
Mar-13	74	11384	514	1000 fixed and mobile detection clinic set up.	
Mar-14	75	12749	611	Roads were cleared with the help of Army	
Mar-15	76	13958	724		
Mar-16	77	14991	853		
Mar-17	78	16044	988	Government warned millions might die if people do not co-operate.	
Mar-18	79	17236	1135		
Mar-19	80	18282	1284		
Mar-20	81	19644	1433		
Mar-21	82	20610	1556		

Here's a graph that shows how the number of infections grew due to the downplaying of this virus by the Iran government.

Fig: II Infections and deaths in Iran due to Covid-19 (a timeline)



Italy:

The blue highlighted sentences show what India can learn from Italy and apply in it's country. The red highlighted text shows the mistakes that Italy made while dealing with this deadly virus.

XI Table: Data about Italy's per day number of infections/ deaths & actions or inactions taken by the government

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Day	Day no.	Infections	Deaths	Column1	Column2	Column3	Column4
Dec-31	1						
Jan-01	2						
Jan-02	3						
Jan-03	4						
Jan-04	5						
Jan-05	6						
Jan-06	7						
Jan-07	8						
Jan-08	9						
Jan-09	10						
Jan-10	11						
Jan-11	12						
Jan-12	13						
Jan-13	14						
Jan-14	15						
Jan-15	16						
Jan-16	17						
Jan-17	18						
Jan-18	19						
Jan-19	20						
Jan-20	21						
Jan-21	22						
Jan-22	23						
Jan-23	24						
Jan-24	25						
Jan-25	26						
Jan-26	27						
Jan-27	28						
Jan-28	29						
Jan-29	30						
Jan-30	31						
Jan-31	32	2		All flights to and from china suspended			
Feb-01	33			Thermal scanners and temperature checks on international passengers arriving at Italian airports.			
Feb-02	34						
Feb-03	35						
Feb-04	36						
Feb-05	37						
Feb-06	38	3					
Feb-07	39						
Feb-08	40						
Feb-09	41						
Feb-10	42						
Feb-11	43						

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Feb-12	44						
Feb-13	45						
Feb-14	46	19					
Feb-15	47						
Feb-16	48						
Feb-17	49						
Feb-18	50						
Feb-19	51						
Feb-20	52						
Feb-21	53	20	1	Website and helpline number launched, schools and other gatherings closed			
Feb-22	54	79	2	Penalties for violation of quarantine from 3 months of imprisonment to fine too.			
Feb-23	55	150	3	Distribution of masks and sanitizer in trains.			
Feb-24	56	227	7	Police officers assigned to patrol quarantined areas.			
Feb-25	57	320	10				
Feb-26	58	445	12				
Feb-27	59	650	17				
Feb-28	60	888	21	Thermal scanners installed at various places like FAO HQ			
Feb-29	61	1128	29				
Mar-01	62	1694	34				
Mar-02	63	2036	52				
Mar-03	64	2502	79				
Mar-04	65	3089	107	Nationwide shutdown of schools			
Mar-05	66	3858	148				
Mar-06	67	4636	197				
Mar-07	68	5883	233				
Mar-08	69	7375	366				
Mar-09	70	9172	463				
Mar-10	71	10149	631				
Mar-11	72	12462	827				
Mar-12	73	15113	1016				
Mar-13	74	17660	1266				
Mar-14	75	21157	1441				
Mar-15	76	24747	1809				
Mar-16	77	27980	2158				
Mar-17	78	31506	2503				
Mar-18	79	35713	2978				
Mar-19	80	41035	3405				
Mar-20	81	47021	4032				
Mar-21	82	53578	4825				

Here's a graph that shows how the number of infections grew over time in Italy.
Fig: III Infections and deaths in Italy due to Covid-19 (a timeline)

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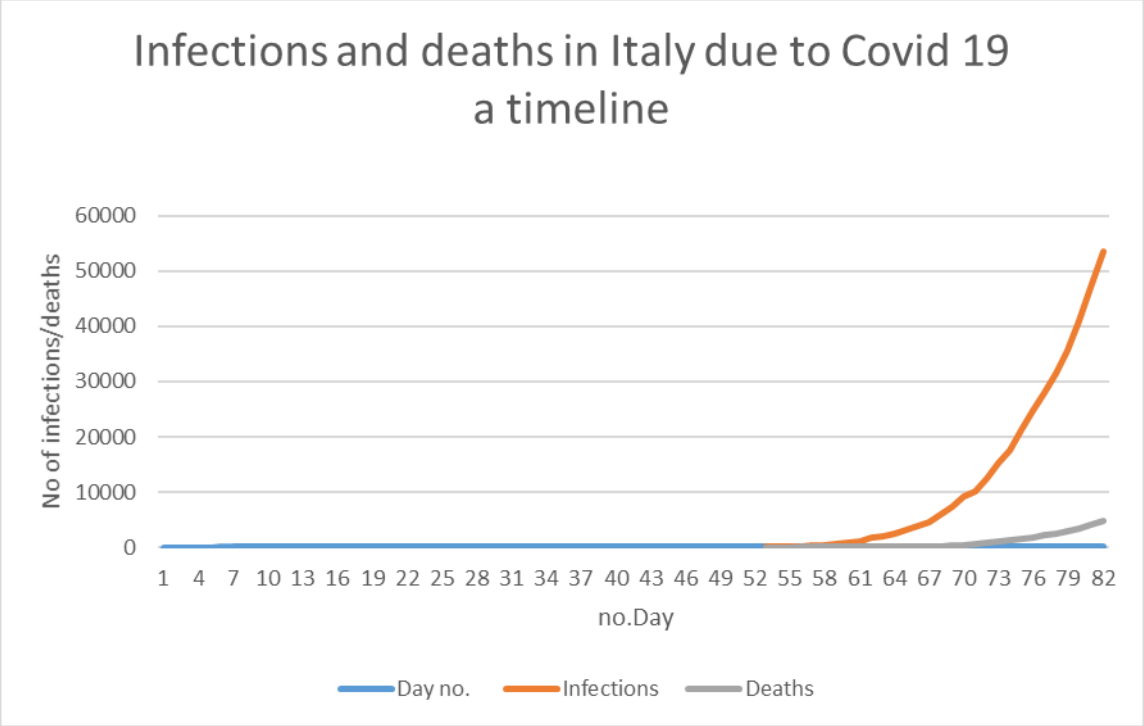

India:

The blue highlighted sentences show what steps India has taken which can prevent coronavirus.

XII Table: Data about Iran's per day number of infections/ deaths & actions or inactions taken by the government

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	–	
Day	Day no.	Infections	Deaths						
Dec-31	1								
Jan-01	2								
Jan-02	3								
Jan-03	4								
Jan-04	5								
Jan-05	6								
Jan-06	7								
Jan-07	8								
Jan-08	9								
Jan-09	10								
Jan-10	11								
Jan-11	12								
Jan-12	13								
Jan-13	14								
Jan-14	15								
Jan-15	16								
Jan-16	17								
Jan-17	18								
Jan-18	19								

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Jan-19	20								
Jan-20	21								
Jan-21	22								
Jan-22	23								
Jan-23	24								
Jan-24	25								
Jan-25	26								
Jan-26	27								
Jan-27	28								
Jan-28	29								
Jan-29	30								
Jan-30	31	1							
Jan-31	32								
Feb-01	33								
Feb-02	34	2							
Feb-03	35	3							
Feb-04	36								
Feb-05	37								
Feb-06	38								
Feb-07	39								
Feb-08	40								
Feb-09	41								
Feb-10	42								
Feb-11	43								
Feb-12	44								
Feb-13	45								
Feb-14	46								
Feb-15	47								
Feb-16	48								
Feb-17	49								
Feb-18	50								
Feb-19	51								
Feb-20	52								
Feb-21	53								
Feb-22	54								
Feb-23	55								
Feb-24	56								
Feb-25	57								
Feb-26	58								
Feb-27	59								
Feb-28	60								
Feb-29	61								
Mar-01	62								
Mar-02	63	6							
Mar-03	64	9							
Mar-04	65	32							

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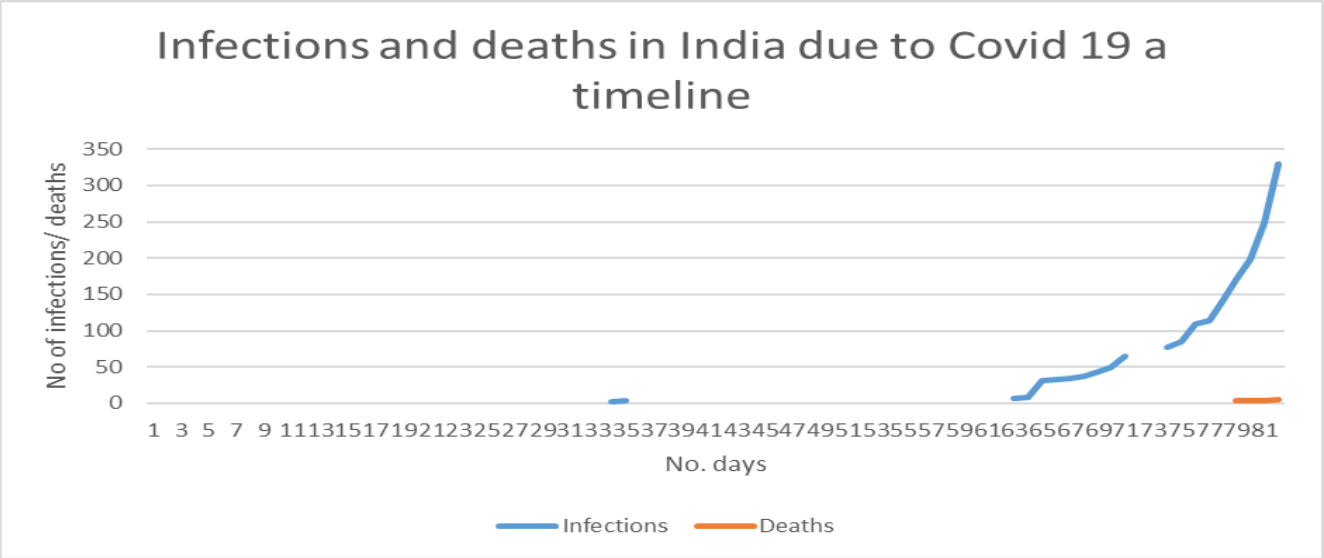
Mar-05	66	33							
Mar-06	67	34							
Mar-07	68	37							
Mar-08	69	43							
Mar-09	70	50							
Mar-10	71	65							
Mar-11	72								
Mar-12	73			Bans all travelers from entering country					
Mar-13	74	77							
Mar-14	75	85							
Mar-15	76	110		Shut gym, clubs, schools and educational establisgments					
Mar-16	77	114							
Mar-17	78	140							
Mar-18	79	170	3	India bans entry of people from EU UK and Turkey					
Mar-19	80	198	3						
Mar-20	81	249	4	Janta curfew announced					
Mar-21	82	329	5	Trains cancelled till 31st march					

Here's a graph that shows how the number of infections grew over time in India.
Fig: IV Infections and deaths in India due to Covid-19 (a timeline)



VIII. ACKNOWLEDGMENT

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