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AN IMPACT OF CORANA VIRUS COVID-19 IN INDIA DURING THE INITIAL LOCKDOWN PERIOD - A STATISTICAL STUDY

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Abstract:

In the modern world health is an important primary factor to the human being. The corona virus disease (COVID-19) epidemic is a public health emergency of global anxiety and creates a challenge to psychological resilience. Many people were infected with Corona virus, especially aged people with diabetes, cancer and respiratory disease. The objective of this study is focusing the impact of the general public in India to enhance their understanding of the psychological effect, and depression during the initial lockdown period of the COVID-19 epidemic. For this significant study of the impact of corona virus (COVID-19) the descriptive statistics, regression, Analysis Of Variance (ANOVA) and chi-square test are applied based on the SPSS software.

Keywords: Epidemic, Corona virus, Psychological effect, SPSS software.

1. Introduction

The disease of corona virus in 2019 epidemic in China is a world-wide health warning [1] and is by far-off the biggest outbreak of unusual pneumonia due to the fact that the Severe Acute Respiratory Syndrome (SARS) epidemic in 2003. Within weeks of the initial outbreak the number of total cases and deaths exceeded those of SARS [2]. The epidemic was first exposed in past due December 2019 when clusters of pneumonia cases of unidentified etiology had been observed to be related with epidemiologically connected exposure to a seafood market and without guides coverage within the town of Wuhan of Hubei Province [3]. Since, the number of cases has persisted to escalate exponentially within and beyond Wuhan, spreading to all 34 regions of China by 30th January 2020. On the same day, the World Health Organization

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Vol-10 Issue-6 No. 9 June 2020

(WHO) confirmed the COVID-19 epidemic a community healthiness emerged situation of worldwide concern [4]. Markov model for the prediction of corona virus COVID-19 in India has been studied by R.Arumugam et. al [5]. Further to SARS, is a beta-corona virus that can be spread to human via in-between hosts which includes bats [6], though the real direction of transmission is still debatable; Human-to-human spread has been exposed through virus-weighted down respiratory drops, as a growing quantity of patients reportedly did no longer have animal market coverage, and cases have also happened in healthcare peoples [7].

Transmissibility of COVID-19 as designated by its reproductive figure has been forecast at 4.08 [8], signifying that on average, each case of COVID-19 will create up to four new cases. The coverage rate after 17th January 2020 has been taken into consideration to have extended 21-fold in comparison to the circumstances in the first half of January 2020 [9]. The mean incubation time is calculated to be 5.2 days, with substantial variant amongst patients [10] and it may be capable of asymptomatic spread [11, 12]. Indications of disease includes fever, chills, cough, coryza, sore throat, respiration difficulty, myalgia, nausea, vomiting and diarrhea. Aged guys with medical co-morbidities are more likely to get immured, with poorer outcomes [13]. Previously, Dr.R.Arumugam et.al.. has been studied the impact of dengue fever in Thanjavur district Using SPSS by [14]. In this paper the impact of corona virus (COVID-19) during the initial lockdown period in India has been studied using statistical tools. Dr. Arumugam. R et. al., [15] focusing the mortality table techniques for the manpower system. A statistical study has been made by Dr. Arumugam. R et., al. [16] for the air pollution during pre-pandemic COVID-19 and in the lockdown period at Chennai city.

2. Data Collection

The corona virus secondary data was collected from the https://www.mygov.in/covid-19 website as on March 22nd 2020 for the study on the impact of corona in the various states in India.

Table 1: Corona virus pandemic in India (As on 22nd March 2020)

2020 corona virus pandemic in India by state and union territory					
SN	**State or Union territory**	**Active cases**	**Deaths**	**Recoveries**	**Total cases**
1	**Andhra Pradesh**	3	0	0	3
2	**Chandigarh**	5	0	0	5
3	**Chhattisgarh**	1	0	0	1
4	**Delhi †**	21	1	5	27
5	**Gujarat**	14	1	0	14
6	**Haryana †**	17	0	0	17

7	**Himachal Pradesh**	2	0	0	2
8	**Jammu and Kashmir**	4	0	0	4
9	Karnataka	17	1	2	20
10	Kerala †	49	0	3	52
11	**Ladakh**	13	0	0	13
12	**Madhya Pradesh**	4	0	0	4
13	Maharashtra †	61	2	0	63
14	**Odisha**	2	0	0	2
15	**Puducherry**	1	0	0	1
16	Punjab	12	1	0	13
17	**Rajasthan †**	21	0	3	24
18	**Tamil Nadu †**	5	0	1	6
19	**Telangana †**	20	0	1	21
20	**Uttarakhand**	3	0	0	3
21	Uttar Pradesh †	16	0	9	25
22	**West Bengal**	4	0	0	4
Total		**295**	**6**	**24**	**324**
**† Inclusive of 41 foreign nationals (1 in Delhi, 14 in Haryana, 7 in Kerala, 3 in Maharashtra, 2 in Rajasthan, 2 in Tamil Nadu, 11 in Telengana, 1 in Uttar Pradesh)*					
As of 22 March 2020[22]					

3. Methods of the Study

We adopted statistical tools like descriptive statistics, regression, ANOVA and chi-square to evaluate the public's immediate psychological reaction in the course of the pandemic of COVID-19.

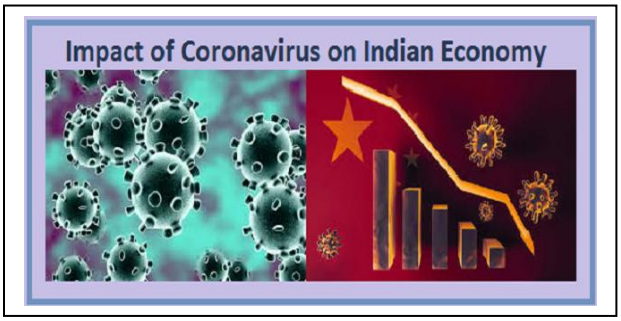


Figure 1: Impact of COVID-19 on Indian Economy

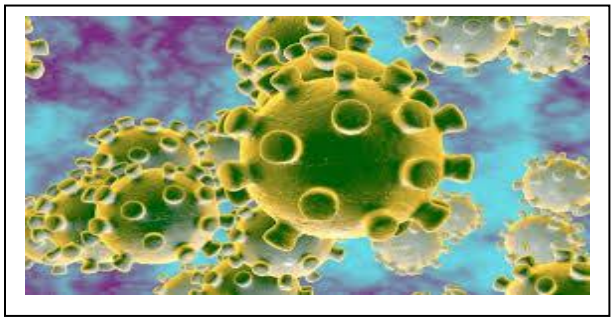
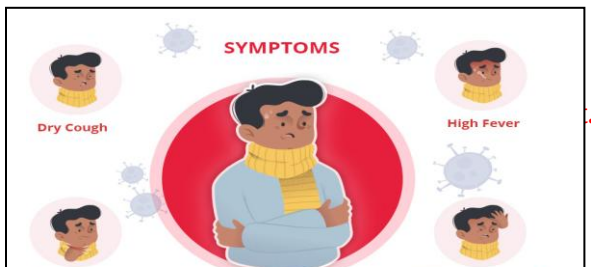


Figure 2: Corona virus image

Mean, median, mode, range, standard deviation and variance are focused on the common public residing in India at some stage in the pandemic of COVID- 19 and the skewness and kurtosis are spotlighted the lack of symmetry to represents the level of COVID- 19. Analysis of variance (ANOVA) and regressions are used to represents the importance stage and also the average relationship some of the energetic cases, death and recoveries of COVID – 19.



ISSN: 2278-4632
Vol-10 Issue-6 No. 9 June 2020

Figure 3: Symptoms of Corona virus

Figure 4: How it spreads Corona virus

Figure 5: Prevention of Corona virus

4. Analysis

Initially we are expressed the information of active cases, deaths and recoveries primarily based on case characteristics, which includes age, sex, dates of disease onset and diagnosis and location. Chi-square tests, Analysis of Variance (ANOVA) and Fisher's tests have been used for appropriate variables. The epidemic curves had been constructed by way of key dates of ailment onset, and case analysis. Onset-to-diagnosis curves had been constructed by means of Logistic curve to information on each onset and diagnosis dates. All analysis became conducted with the use of Statistical Package for the Social Sciences (SPSS 23.0) software and distribution graph were plotted using Logistic curve.

Table 2: Descriptive Statistics

				Bootstrap[e]			
						95% Confidence Interval	
			Statistic	Bias	Std. Error	Lower	Upper
N	Valid	state	22	0	0	22	22
		active	22	0	0	22	22

ISSN: 2278-4632
Vol-10 Issue-6 No. 9 June 2020

		deaths	22	0	0	22	22
		recoveries	22	0	0	22	22
	Missing	state	0	0	0	0	0
		active	0	0	0	0	0
		deaths	0	0	0	0	0
		recoveries	0	0	0	0	0
Mean		active	13.41	.05	3.09	8.00	20.27
		deaths	.27	.00	.11	.09	.50
		recoveries	1.09	-.01	.47	.32	2.14
Median		active	9.67[a]	-.18	4.11	3.86	16.33
		deaths	.24[a]	.00[f]	.10[f]	.09[f]	.45[f]
		recoveries	.41[a]	.05[g]	.21[g]	.15[g]	.94[g]
Std. Deviation		active	15.302	-.834	3.721	6.851	21.125
		deaths	.550	-.026	.123	.294	.739
		recoveries	2.223	-.179	.679	.767	3.239
Variance		active	234.158	-11.008	105.395	46.932	446.246
		deaths	.303	-.012	.126	.087	.545
		recoveries	4.944	-.302	2.794	.589	10.494
Skewness		active	2.067	-.249	.685	.120	3.028
		deaths	1.993	-.075[f]	.759[f]	.736[f]	3.621[f]
		recoveries	2.619	-.318[g]	.731[g]	1.104[g]	3.994[g]
Kurtosis		active	4.477	-.571	3.453	-1.677	11.426
		deaths	3.502	-.316[f]	4.046[f]	-1.436[f]	13.270[f]
		recoveries	7.402	-1.873[g]	4.479[g]	-.270[g]	17.078[g]
Percentiles	10	active	1.60[b]	.24[h]	.58[h]	1.07[h]	3.21[h]
		deaths	.[b,c]	.[i]	.[i]	.[i,j]	.[i,j]
		recoveries	.[b,c]	.[i]	.[i]	.[i,j]	.[i,j]
	20	active	2.70	.13	.80	1.54	4.22
		deaths	.	.[i]	.[i]	.[i,j]	.[i,j]
		recoveries	.	.[i]	.[i]	.[i,j]	.[i,j]
	25	active	3.20	.13	1.00	1.86	5.00
		deaths	.	1.80E+308[k]	.04[k]	.[j,k]	.[j,k]
		recoveries	.	1.80E+308[l]	.05[l]	.00[l]	.18[l]
	30	active	3.64	.29	1.50	2.20	8.39
		deaths	.	1.80E+308[m]	.04[m]	.01[m]	.20[m]
		recoveries	.	1.80E+308[n]	.08[n]	.01[n]	.28[n]
	40	active	4.52	1.46	3.12	3.15	13.65
		deaths	.03	.06[o]	.06[o]	.03[o]	.25[o]
		recoveries	.15	.06[p]	.14[p]	.03[p]	.55[p]
	50	active	9.67	-.18	4.11	3.86	16.33
		deaths	.24	.00[f]	.10[f]	.09[f]	.45[f]
		recoveries	.41	.05[g]	.21[g]	.15[g]	.94[g]
	60	active	13.70	-.45	3.52	4.73	18.51
		deaths	.45	.01[f]	.10[f]	.29[f]	.67[f]
		recoveries	.67	.11[g]	.33[g]	.37[g]	1.68[g]
	70	active	16.60	-.09	2.88	10.81	20.68

	deaths	.66	.01[f]	.11[f]	.49[f]	.90[f]
	recoveries	.93	.31[g]	.61[g]	.59[g]	2.76[g]
75	active	18.00	.25	3.89	13.00	28.00
	deaths	.76	.01[f]	.12[f]	.59[f]	1.09[f]
	recoveries	1.33	.28[g]	.81[g]	.70[g]	3.67[g]
80	active	20.07	.66	6.06	14.20	40.28
	deaths	.87	.02[q]	.15[q]	.69[q]	1.31[q]
	recoveries	2.07	.09[g]	1.04[g]	.81[g]	4.68[g]
90	active	35.93	-1.29[r]	12.68[r]	18.20[r]	57.64[r]
	deaths	1.32	-.01[s]	.30[s]	.89[s]	1.84[s]
	recoveries	4.07	.12[t]	1.71[t]	1.40[t]	7.88[t]

Table 3: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Active	Between Groups	4916.818	15	327.788	3933.455	.000
	Within Groups	.500	6	.083		
	Total	4917.318	21			
Deaths	Between Groups	5.864	15	.391	4.691	.033
	Within Groups	.500	6	.083		
	Total	6.364	21			
recoveries	Between Groups	103.818	15	6.921	.	.
	Within Groups	.000	6	.000		
	Total	103.818	21			

Table 4: Chi-square Statistics

	active	deaths	recoveries	total
Chi-Square	3.455[a]	19.727[b]	42.364[c]	4.182[d]
Df	13	2	5	15
Asymp. Sig.	.996	.000	.000	.997

Table 5: Regression based ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1750.547	1	1750.547	11.056	.003
Residual	3166.771	20	158.339		
Total	4917.318	21			

ISSN: 2278-4632
Vol-10 Issue-6 No. 9 June 2020

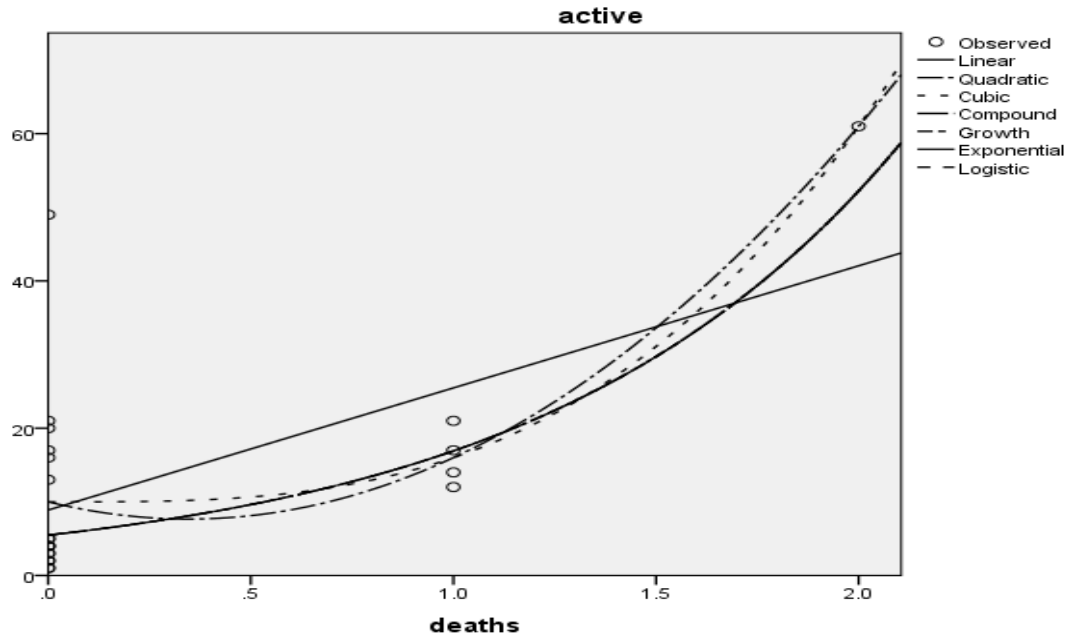


Figure 6: Logistic curve based on corona virus (COVID – 19)

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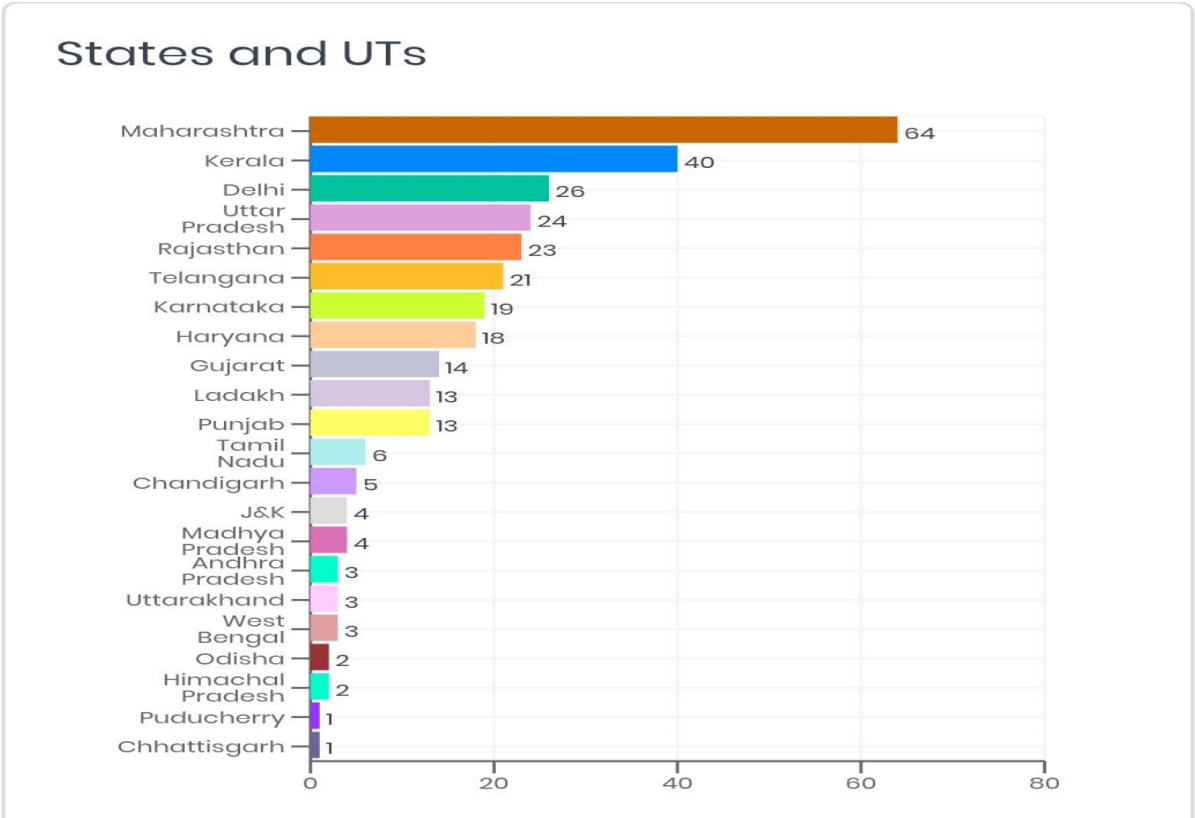

Figure 7: corona virus (COVID – 19) pandemic in India

ISSN: 2278-4632
Vol-10 Issue-6 No. 9 June 2020

Figure 8: Important information of corona virus (COVID – 19)

5. Discussions and Result

Table1 gives that the pandemic situation of Corona virus in India as on 22nd March 2020. Figure 1 and Figure 2 represents the impact of corona virus on Indian Economy and the image of corona virus. Figure 3 and 4 shows that the symptoms of Corona virus (COVID-19) and the way it spread very quickly. Prevention of corona virus is explained by the figure 5. Table 2 spotlighting that the mean, standard Error of mean, median, mode and variance about active, death and recoveries of corona virus (COVID – 19). Also we made the variance skewness, kurtosis and percentiles for the COVID -19 within the three levels like active, Death and recoveries; moreover 95% confidence intervals are given by bootstrap method. Bootstrap technique gives the most extreme and least qualities and therefore the deviations at the 95% certainty interim within the three levels like active, death and recoveries in both male and female altogether states from table 2.

Also, the table 2 gives the mean is 13.45 and the 95% Confidence Interval is (8.00, 20.27) in the active stage. In this interval we expect the population mean. The 5% trimmed mean class range we would get if we excluded the lower and upper 5% from our corona infected peoples. If this value may be very distinctive from the mean we would count on outliers. In this case, because the trimmed average is greater than the actual mean, the lowest observations appear to be pulling the actual mean down.

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Vol-10 Issue-6 No. 9 June 2020

The median (9.67) is within the active level the 50th percentile, which is the center line of the boxplot. The variance is how much variability we see in squared units, but for less difficult interpretation the Standard Deviation is the variability we see in average class length units. The nearer the Standard Deviation is to zero the decrease the variability. Here, the average is higher than the median; it indicates a proper right skew. Skewness is a degree of asymmetry, a threshold is 2.067 in active stage, the value 1.033 is in the death level and 2.619 inside the recoveries of Corona all are in the positive skew. The results suggest that a high positive (right) skew. Kurtosis measures the heaviness of the (COVID-19). Kurtosis values greater than three is considered as abnormal.

Table 3 highlights that the Analysis of Variance (ANOVA) table for the active cases of corona, death and recovery from the corona, within the active cases there's no significant (ie p = 0.000). Next level is death, during this stage we've there's a significant at 5% level (ie p = 0.033).

Fourth table represents that the chi-square statistics 13 degrees of freedom within the active stage, there's a significant level at 5% level. Within the death and recovery stage there's no significant at 5% level. The large level and point probabilities (0.000 to 0.996) and Chi-square qualities are given.

Fifth table described the relapse based ANOVA, there is a critical (p = 0.003) at 5% level (ie Variance ratio = 11.056). Figure 6 shows that the logistic curve dependent on the corona (COVID – 19) in the observed, quadratic, compound, development, exponential and logistic levels. Seventh figure represent that the column bar diagram about the corona infection (COVID-19) pandemic in India. Figure 8 depicts that significant data for the corona infection help line with contact number and E-mail id.

Government of India is taking all necessary steps to make sure that we are prepared well to stand the challenge and warning posed by way of the growing pandemic of COVID 19 – the Corona Virus. The most vital component in preventing the spread of the Virus regionally is to empower the citizens with the right information and taking precautions as per the advisories being issued with the aid of Ministry of Health & Family Welfare.

6. Conclusions

The present study has been carried out in order to identify the effect of the corona virus (COVID -19), Children, adults, men, women and aged people were tested all the states in India.

Children at all ages were sensitive to COVID-19 and there was no significant gender distinction. Compared to different states and union territories Maharashtra, Kerala and Delhi is high corona infected states right now. The children's distribution COVID-19 cases varied with time and space and the most of the cases concentrated in Maharashtra and encompassing areas. Taking everything into account, the infection of COVID-19 was of clustering onset, is more likely to infect aged peoples with co morbidities, and can bring about serious and even fatal respiratory diseases, for example, ARDS. With these our important duty is save all our peoples from corona virus and save our nation.

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