

# A Statistical Survey of Covid-19 in Madhya Pradesh

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**Abstract:** Covid-19 emerged as an epidemic from China and spread all over the world. Due to this, terrible and worrying situation has arisen in different countries, due to which not only social and economic activities have been affected but millions of people have lost their lives. Because of Corona, a serious crisis situation had arisen in the whole of India as well as in the state of Madhya Pradesh. In this survey paper, we present the brief summary related to corona virus and have assessed the situation of corona virus in the state of Madhya Pradesh from April 2020 to March 2021 and observed the possible economic losses in different regions.

## I. INTRODUCTION:

In 1965, Tyrell and Bynee[3] discovered a microorganism bacterium named B814, which was found in the respiratory tract of humans and affected the people of the common cold. This virus had serious effects on humans as well as animals. Subsequently in 1966, a new virus DUB229E was discovered by Dorothy and Hamre[4] which affected the lungs and respiratory tract of humans. This was different from other respiratory viruses discovered.

In 1967, scientists discovered a new human virus with the same morphology as B814, named OC43. The next year, in 1968, a group of scientists discovered a new class of virus that was similar to the corona virus. In 2002 and 2003, the virus SARS-I, which severely affected the respiratory system, was discovered in southern China. In 2006 and 2005, researchers discovered two corona viruses called NL63 and HKUI from the body of a child suffering from pneumonia and two other adult humans.

In 2012, researchers in Saudi Arabia discovered the MERS-COV corona virus from the human body as a disease related to pneumonia and kidney. And finally in December 2019, scientists in Wuhan city of China identified a new form of corona virus which is more deadly, due to the crown-like shape around the virus, it was named NOVEL CORONA and SASS-II

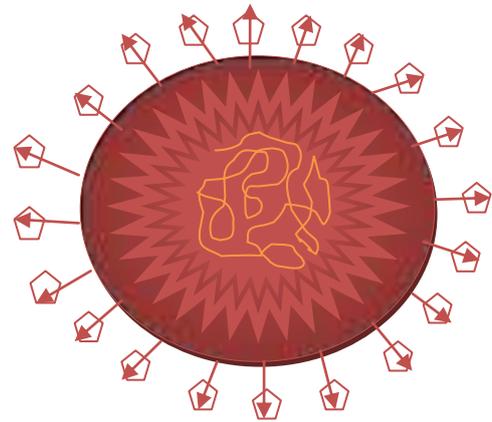
**Table 1. Various form and discovery of corona- virus**

YEAR	VIRUS NAME	PROPERTY
1965	B814	PATHOGEN
1966	DUB 229E	RESPIRATORY VIRUS
1967	OC43	ALLERGY & INFECTIOUS VIRUS
1968	JUNE ALMEIDA	FRINGE
2003	SARS	RESPIRATORY SYNDROME

2004	NL63	PNEUMONIA
2005	HKU1	PNEUMONIA
2012	MERS-COV	PNEUMONIA & KIDNEY FAILURE
2020	SARS-2	RESPIRATORY SYNDROME

## 1.1 VIRUS STRUCTURE

The corona virus is a virus made of ribonucleic acid (RNA) surrounded by a lattice structure of a protein called a capsid. This reticular structure provides a protective covering to the center of the virus. These protein particles of virus are called nucleocapsid which is very long in length. It is then surrounded by an outer layer of fat which is the glycoprotein membrane, along with a protein-like envelope with a spike covering it completely as shown in figure 1.



**Figure 1: Corona Virus Structure**

These viruses develop in the cytoplasm found in the cells of infected humans or animals, due to which the infected cells gradually begin to be destroyed.

The paper is organized as follows, in section 2 which elaborate Literature Survey, In the section 3 describe Status of Madhya Pradesh due to Corona, in Section 4 Proposed Model For Corona Curfew will be discussed, in section 5 we state Observation of Economic Loss due to Corona, Finally, we conclude the paper in section 6.

## II. LITERATURE SURVEY

Dharmendra Kumar et al.[1] In this paper, authors present the history of corona virus, its structure, reasons of its spreading behavior with different modes, virus features and the prevention guidelines of the corona virus. Covid was spreading human to human to transmission by close contact by means of airborne drops producing by hacking,

wheezing, kissing and kissing. So keep away from these exercises with contaminated accomplices and relatives.

Covid may communicate through pet creatures like canine, feline, pig, cow, turkeys. So stay away from contact and separate them if noticed any disease exercises like looseness of the bowels, cold, fever. According to WHO and ECDC rule stay away from the contact with sick individual and furthermore stay away from the market or public spot according to conceivable.

Muhammad Adnan Shereen et al.[2] Researchers are as yet exploring the development and beginning of SARS-CoV-2. In addition, its zoonotic wellspring of transmission to people has not been affirmed at this point, nonetheless, succession based examination recommended bats as the key repository. Covies have a place with the Coronaviridae family in the Nidovirales request. Crown addresses crown-like spikes on the external surface of the infection; consequently, it was named as a Covid. In the current audit, creator sum up and similarly investigate the rise and pathogenicity of COVID-19 contamination and past human Covies including extreme acute respiratory condition Covid (SARSCoV) and center east respiratory disorder Covid (MERS-CoV). We likewise talk about the methodologies for creating viable antibodies and helpful mixes to adapt to this viral flare-up.

Yen-Chin Liu, Rei-Lin Kuo, Shin-Ru Shih.[3]. Human Covies typically cause gentle upper respiratory sicknesses. Be that as it may, in the previous twenty years, two Covies sent from creatures, SARS-CoV and MERS-CoV, have caused extreme pneumonia and passing in people. Because of the great grouping homology with a Covid detached from bats, SARS-CoV-2 is viewed as a zoonotic beginning Covid. Without a doubt, SARS-CoV-2 has become the fifth human Covid, and it is conceivable that this infection will persistently course in the human populace later on.

Since, explicit antiviral medicines and immunizations are as yet being worked on, testing, isolate, and social separating are urged to forestall infection spread. In any case, since the infection continues to transform and developing during the pandemic, concentrates on viral pathogenicity, medicines and prophylactic antibodies ought to intently consider the hereditary qualities of the infection.

Mohammed Asadullah Jahangir et al.[4] a variety of infections was discovered which was named CORONA, where the term crown indicated the crown like appearance of the surface in the morphological design of infections. In this article the writer surveys the historical backdrop of Covies, its lifecycle and genomic structure, current pandemic circumstance, determination of COVID-19, preventive measures, current prescription and pipeline drugs and symptomatic kits.

The SARS and MERS plague where the updates about the rise of novel Covid and its likely danger to the human populace. The epic Covid is altogether like the SARS and MERS infections. Yet at the same time we don't think a lot about the conceivable treatment system for this novel infection. They are causing an assortment of human and creature veterinary infections.

Jeffrey S. Kahn, Kenneth McIntosh [5]: this survey presents the history of corona virus and its recently discoveries. According to this paper there are different types

of corona viruses are present and approximate five different type of corona viruses identified which are seriously affected the humans. Information uncovered that Covid diseases contribute as much as 35% of the all out respiratory viral movement during scourges. Generally speaking, he extent of grown-up colds created by Covies was assessed at 15%.

Mujeeb Khan, Syed F. Adil, et al. [6], different epidemiological parts of COVID-19 like method of spread, passing rate, multiplying time, and so forth, have been examined exhaustively. Aside from this, distinctive specialized issues identified with the COVID-19 pandemic including utilization of covers and other financial issues related with the pandemic have additionally been summed up.

Furthermore, creators looked into different parts of patient administration systems including component of activity, accessible demonstrative apparatuses, and so on, and furthermore talked about various procedures for the advancement of viable antibodies and restorative blends to manage this viral episode. In general, by the incorporation of different references, this survey covers, exhaustively, the main parts of the COVID-19 pandemic.

Omid V. Ebrahimi et. Al. [7] surveyed the pervasiveness of wretchedness and nervousness manifestations during the COVID-19 pandemic. A sum of 10,061 grown-ups took part in the investigation. Indications of melancholy and tension were 2 to multiple times higher contrast and pre-pandemic tests. Members who overwhelmingly socially removed themselves uncovered considerably higher manifestations than their partners. Females, ethnic and sexual-direction minorities, more youthful grown-ups, jobless people, and members with a mental finding announced higher commonness of mental indications.

Stress over delayed span of physical-separating conventions and disappointment of self-governance was related with height in indications of sorrow and uneasiness. Expanded ability to manage the pandemic emergency was related with less unfriendly manifestations. Actual exercise, encountering nature, and interruption with exercises were related with decreased burdensome side effects yet not uneasiness. The degree of data access about the pandemic was related with decreased tension indications

Leal Filho et. Al. [8] covid-19 is a critical condition in the all over world. Authors focus on sustainable development and its research related issues which have affected during covid lockdown time. this review agreed with the period in a few European nations, the affirmation of COVID-19 in all North American regions, and the quickly rising include in South America. The data assembled feature significant parts of the effect of COVID-19 as far as every day based examination schedules. It likewise shows the variation measures expected to permit a continuation of exploration—alongside instructing and other college exercises—just as future arranging and the ability to continue practical advancement research.

Mohammad Hassan Shakil et. Al. [9] In this paper author analyze 57 studies based on covid 19 and its impact on environment. For analyzing the data they use statistics

Table 2: Month wise corona status in developed district in Madhya Pradesh

District	Cases	April 2020	May 2020	June 2020	July 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021
<b>Indore</b>	Total Cases	1486	3486	4709	7328	12992	24006	34042	42149	54918	57490	59617	66569
	New Cases	1424	2000	1223	2619	5664	11014	10036	8107	12769	2572	2127	6952
	Death Cases	68	64	97	82	82	172	117	78	113	51	9	18
	Recovery cases	177	1774	1501	1584	3898	9910	11395	6214	14323	5094	1568	5170
<b>Bhopal</b>	Total Cases	508	1467	2789	6313	10496	17408	24626	31974	39281	42535	44082	49029
	New Cases	504	959	1322	3524	4183	6912	7218	7348	7307	3254	1547	4947
	Death Cases	15	42	40	79	109	107	88	38	59	34	7	9
	Recovery cases	162	801	1231	1769	4678	6272	7709	5940	8146	4420	1771	2308
<b>Gwalior</b>	Total Cases	4	121	368	2250	5305	10529	12344	14586	15922	16413	16536	17203
	New Cases	4	117	247	1882	3055	5224	1815	2242	1336	491	123	667
	Death Cases	0	2	1	9	36	82	31	20	20	25	4	5
	Recovery cases	2	70	210	1390	2231	4778	3165	1763	1790	717	144	332
<b>Jabalpur</b>	Total Cases	85	238	401	1192	4105	9774	12773	14207	15914	16256	16638	18206
	New Cases	78	153	163	791	2913	5669	2999	1434	1707	342	382	1568
	Death Cases	1	8	5	13	53	70	53	20	19	9	1	4
	Recovery Cases	7	99	139	463	2250	5353	3539	1414	1465	970	500	772

and regression techniques for systematic analysis. Firstly they create three clusters for the impact of covid 19 on environment. These clusters are as follow. First cluster consist the environmental degradation, second consist climate effect during covid-19 and third is related to pollution effect in covid time and authors investigated the issue by taking a gander at the two sides of the coin; that is, the effect of COVID-19 on the climate and the effect of ecological pointers on COVID-19 transmissions and mortality.

Ozili, Peterson & Arun [10] draw on true perceptions in evaluating the prohibitive measures, money related arrangement measures, monetary approach measures and the general wellbeing estimates that were embraced during the period. they experimentally analyze the effect of social removing strategies on financial exercises and securities exchange files. The discoveries uncover that the expanding number of lockdown days, money related arrangement choices and worldwide travel limitations seriously influenced the degree of monetary exercises and the end, opening, most reduced and most elevated stock cost of significant financial exchange lists.

### III. STATUS OF MADHYA PRADESH DUE TO CORONA

After surveying the four major developed districts of Madhya Pradesh, Bhopal, Indore, Gwalior, Jabalpur, it was found that the highest number of cases of corona virus were found in these districts out of the entire Madhya Pradesh. The main reason for this was the high population in these districts as well as the population density being a major reason. Apart from this, there was to be a plethora of programs in these districts from all angles of social, economic and political. From April 2020 to March 2021, the condition of corona cases, death cases and recovered patients found in these four districts has been surveyed.

On analyzing the corona infection month-wise, it is clear that the rate of corona infection has been highest between September and December. Month wise death cases of corona infection were analyzed in 4 developed districts of Madhya Pradesh state from April 2020 to March 2021 for which month wise graph diagrams have been presented.

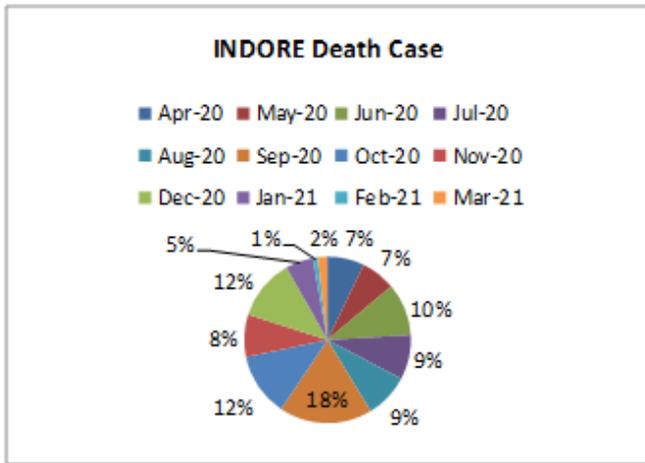


Figure 2: Month wise Death Case analysis for Indore

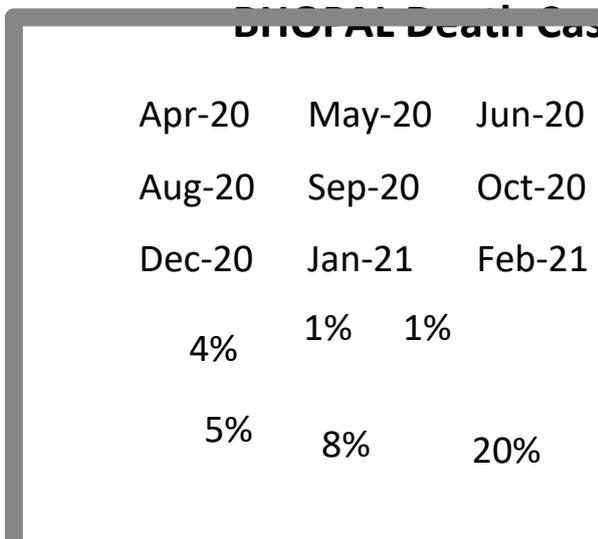


Figure 3: Month wise Death Case analysis for Bhopal

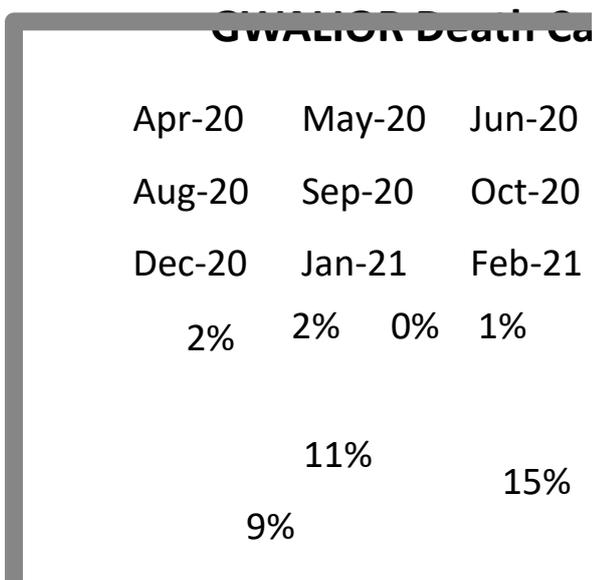


Figure 4: Month wise Death Case analysis for Gwalior

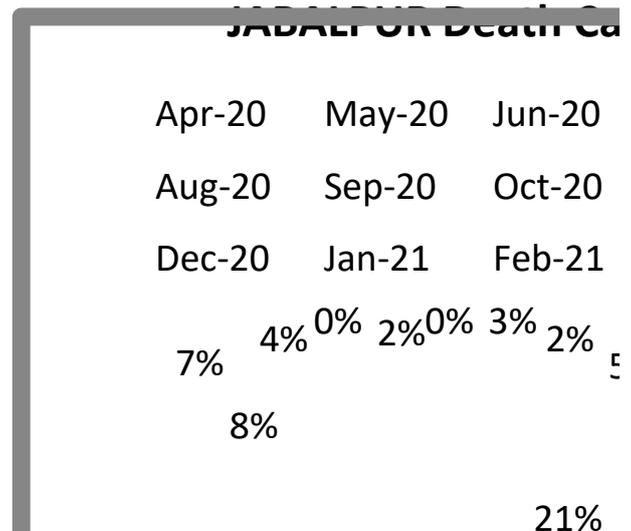


Figure 5: Month wise Death Case analysis for Jabalpur

IV. PROPOSED MODEL FOR CORONA CURFEW

The model can be used to eliminate the corona internally, according to this model initially from village to village, from town (city) to town (city), tehsil to tehsil, district to district is completely locked.

Table 3: Four Layer corona security model

	VILLAGE	TOWN	BLOCK	DISTRICT
VILLAGE	LOCK	UNLOCK	UNLOCK (LIMITED)	UNLOCK (DAY TIME)
TOWN	QUARANTINE (7 DAYS)	LOCK	UNLOCK (LIMITED)	UNLOCK (DAY TIME)
BLOCK	QUARANTINE (10 DAYS)	QUARANTINE (14 DAYS)	LOCK	UNLOCK (DAY TIME)
DISTRICT	QUARANTINE (7 DAYS)	QUARANTINE (10 DAYS)	QUARANTINE (14 DAYS)	LOCK

This model is classified into 4 layers –

Layer-1:

If a person from one village wants to go to another village, then he should be banned for this, but if any person from the village wants to go to the nearest town for fulfillment of his needs, then he should inform the village secretary or sarpanch. Let it go If the person wants to go to the Tehsil, he should be allowed to go to the home district (district city) with limited permission and during the day time only.

In this way, the number of people going from village to town, tehsil, or district city will be limited, will not travel unnecessarily and at the same time they will have a record so that those people can be contacted in case of any problem.

**Layer-2:**

If a person goes from town to village, then he should be made compulsory for 7 days and it should be the responsibility of the sarpanch or secretary. In this sequence, from one town to another town should be completely locked and if any person of the town wants to go to the block (tehsil) for any necessary work, then he should be allowed to go there with limited permission and back to the town from the block (tehsil). On arrival, a mandatory quarantine of 7 days should be done. Similarly, when going from block (tehsil) to home district city, only day time should be allowed and on coming back to town, mandatory quarantine should be done.

**Layer-3:**

If a person goes from tehsil to village, then he should be given mandatory quarantine for 10 days and if he goes from tehsil to town, 14 days. One tehsil should be completely locked from another tehsil and allowed to go from tehsil to their home district city during day time, 14 days mandatory quarantine should be done on return from district. If it is necessary to go from one tehsil to another tehsil, then those people can meet in their home district city, if apart from this it is also necessary to go there then they should be allowed to go there with the permission of SDM.

**Layer-4:**

The district should be completely locked from one district to another, but if it is necessary, with the permission of the collector, it should be allowed to go, as well as its daily report should also be submitted to the sir. A person residing in the district city should be quarantined for 7 days on going to the village, 10 days if going to the town, 14 days if going to the tehsil.

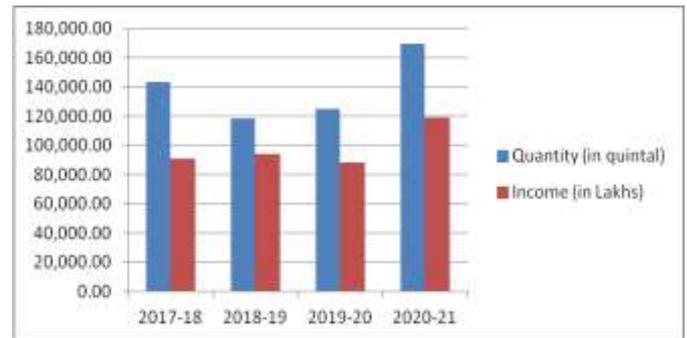
## V. OBSERVATION OF ECONOMIC LOSS DUE TO CORONA

A survey of the exports made by the state of Madhya Pradesh in the last five years and the income received from it was done. Also, after doing month wise analysis of the exports made in the last two years of the Corona period, it is clear that the economic loss was more during the period of April 2020 and lockdown.

(A) Last five Year Exportation Report in Madhya Pradesh

**Table 4: Last five year exportation report of Madhya Pradesh**

Year	Quantity (in quintal)	Income (in Lakhs)
2016-17	84,441.74	62,224.57
2017-18	143,200.33	91,197.82
2018-19	118,499.34	94,062.95
2019-20	1,25,046.44	88431.55
2020-21	169,915.69	119,259.32



**Figure 6: Analysis of Exportation in last five years**

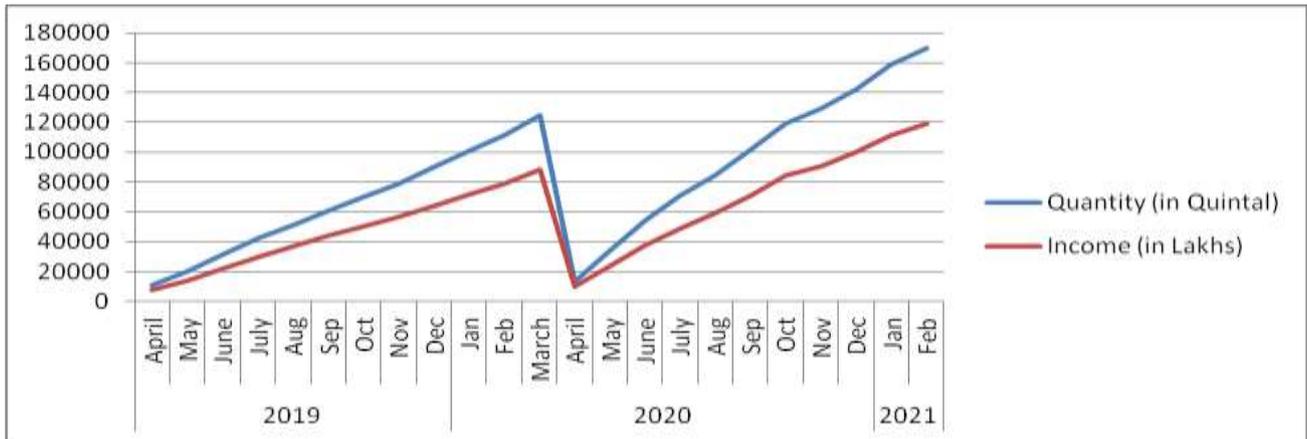
(B) Month Wise Exportation Analysis During Covid Year from April 2019 to feb 2021

**Table 5: Month wise exportation analysis during Covid year from April 2019 to Feb 2021**

Year	Month	Quantity (in Quintal)	Total Income (in Lakhs)	
2019	April	10882.77	7658	
	May	20469	13880	
	June	31549	21930	
	July	42477.79	29899.82	
	Aug	51526.24	36923.12	
	Sep	60628.58	43815.45	
	Oct	70463.73	50513.79	
	Nov	78897.97	57002.06	
	Dec	89943.45	64095.64	
	2020	Jan	101156.04	71774.98
		Feb	111176.27	78718.78
		March	125046.44	88431.55
April		12853	9738	
May		33427.91	23796.87	
June		54383.09	37748.72	
July		70855.47	49155.89	
Aug		84234	59050	
Sep		101442.65	71324.13	
Oct		118815.40	84242.42	
Nov		129439.35	91059.47	
Dec		142296.01	100121.50	
2021	Jan	158743.37	111230.82	
	Feb	169915.69	119259.32	

## VI. CONCLUSION

Due to Corona epidemic, a situation of crisis has arisen in entire Madhya Pradesh. Due to the high social, economic, political activities and people not wearing masks properly, not maintaining social distance, the corona situation got worse. Due to this, there was not only loss of life, but due to more impact of economic activities, people had to face the problem of employment along with reduction in export income, due to which the unemployment rate increased during the Corona period. On analyzing the exports made from April 2019 to February 2021, it is clear that due to the lock down due to Corona, there was a huge reduction in the exported goods and the income from this period.



**Figure 7: Exportation Breakpoint**

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