

Working Paper 01/2021

LEARNING FROM COVID-19 CASES

A Sociological Study of Patna District, Bihar

K. C. Saha, IAS (Retd)
Ex Member Lokayukta, Bihar



Centre for Health Policy
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Foreword

It's a pleasure to share the findings of a research study regarding Covid-19 cases in Patna district during June, 2020 and May, 2021, undertaken by Shree KC Saha, presently a retired member of Indian Administrative Service (IAS), Bihar cadre. This study aimed to find the distribution and characteristics of reported cases of Covid-19, explore different coping strategies adopted by infected people and their caregivers and assess various preventive/control measures taken by the Government Agencies and community to reduce its transmission. This study was based on primary data of 23,344 Covid-19 cases reported between June, 2020 and May 15, 2021 in Patna that were obtained from a private laboratory. Other primary sources of information included telephonic interviews of 200 consenting individuals residing in Patna who tested positive during the said period, and a number of government functionaries from the state to block level and elected members of local bodies.

The findings of the present study are indeed valuable and would facilitate the identification of proper strategies to control the pandemic. For one, knowledge about the geographical distribution of Covid-19 cases in Patna would help in locating the high-risk areas. Secondly, the study will also help in identifying some of the probable factors contributing directly or indirectly to the spread of the virus. Finally, the study would shed light on the efficacy of the various coping strategies, based on experience of patients affected by Covid-19.

Given limited evidence on the effectiveness of interventions by the State government to contain Covid-19 in the state, this baseline study attempts to bridge a critical research gap. We sincerely hope the recommendations of this report identify the essential measures that State government may adopt to be more efficient in planning Covid-19 emergency response and reduce its impact on vulnerable population.

Prabhat P Ghosh
Director, CHP

About the author

Shree KC Saha did Masters in Physics and Bachelor in Law from Delhi University. He joined the Indian Administrative Service in 1975. He served in the Departments of Education, Industries, Revenue and Land Reforms, Food and Consumer Affairs, Welfare and Panchayati Raj under the State Government of Bihar. He served in the Election Commission of India and the Ministry of Commerce under the Government of India. He served as the Development Commissioner and the Chairman of the Public Service Commission, in Bihar. He was a member of a French team in Paris for a study project: "Europe and the Suburbs". He worked as a Consultant in the United Nations Office on Drugs and Crimes, in Delhi. He has published several papers in National and International Journals on Refugees, Internal Displacement and Smuggling of Migrants. He has published a book on Election Model Code of Conduct. He also worked as a Consultant on Public Health under Bill & Melinda Gates Foundation. He retired as a Member of Lokayukta (Ombudsman) Bihar in 2021.

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Abbreviations

BDO	Block Development Officer
MOI/C	Medical Officer In-charge of PHC
PHC	Primary Health Centres
CHC	Community Health Centres
APHC	Additional Primary Health Centres
AIIMS	All India Institute of Medical Science
PMCH	Patna Medical College Hospital
NMCH	Nalanda Medical College Hospital
IGIMS	Indira Gandhi Institute of Medical Sciences
PMC	Patna Municipal Corporation
SHG	Self-Help Group
RHP	Rural Health Practitioners

Learning from Covid-19 Cases: A Sociological Study of Patna District, Bihar

1. Introduction

Bihar is a State in the Eastern part of India. It is bounded by Nepal in the North, the State of West Bengal in the East, Jharkhand in the South and Uttar Pradesh in the West (Map 1). It has a population of 10.41 crore, as per 2011 census. The State is divided into 38 Districts. Each district is divided into Blocks. Each block is further divided into Panchayats. The Patna District has a population of 58.38 lakh, of which 16.84 lakh is the population of Patna town. It is divided into 23 Blocks (Map 2). The Table 1 shows the population and the number of Panchayats in each Block in Patna district. A Panchayat has 3 to 4 villages. The population of a Panchayat varies from 8000 to 12000. The Patna Municipal Corporation (PMC) has 6 Zones and 75 Wards. Bihar has 11 medical colleges, including AIIMS Patna. The health infrastructure comprises — District Hospitals (36), Referral Hospitals (67), Sub-divisional Hospitals (54), Primary Health Centres (533), Additional Primary Health Centres (1393) and 9949 Sub-centres.

Map-1



Map-2

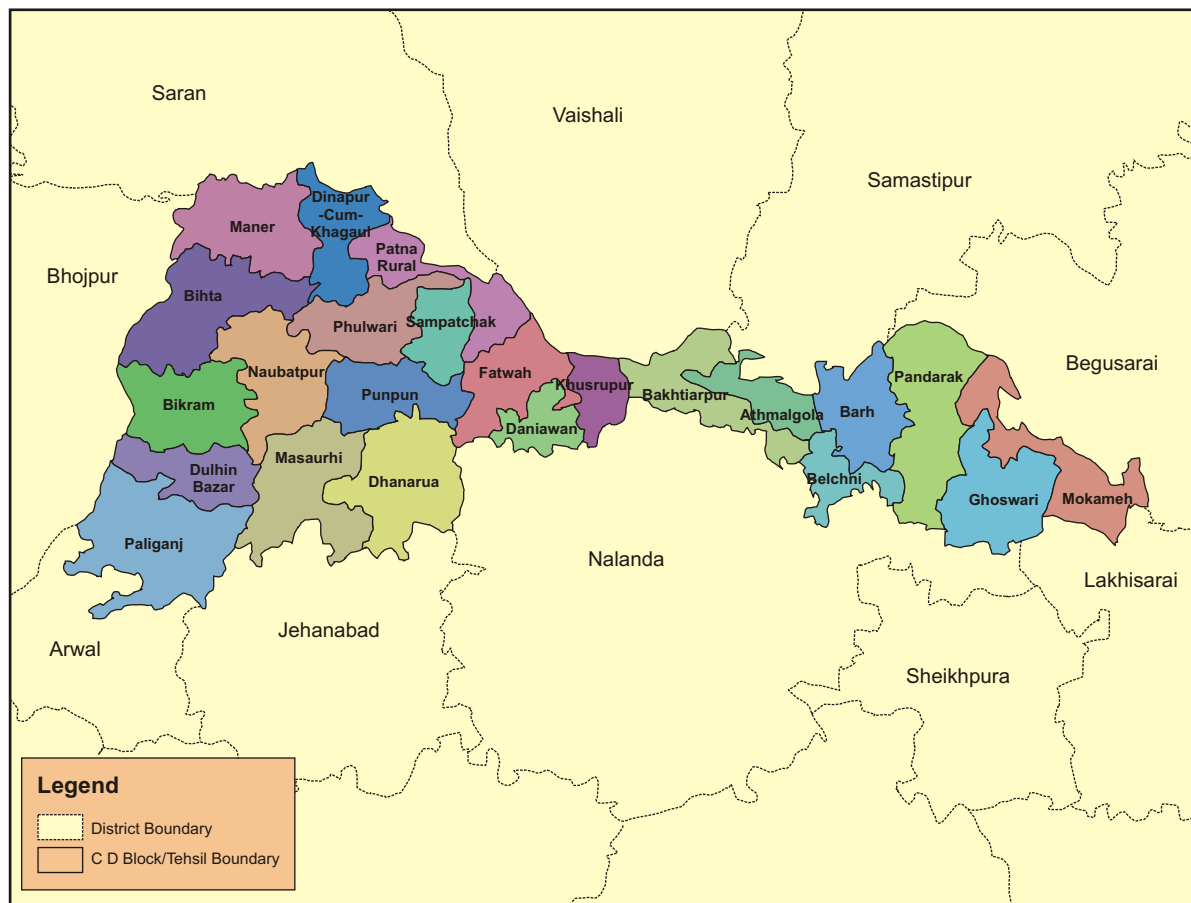


Table 1 : Block wise Population and number of Panchayats in Patna District

Sr. No.	Name of Block	Population	Number of Panchayats	Sr. No.	Name of Block	Population	Number of Panchayats
1	Patna Rural	1,768,989	7	13	Khusrupur	109,005	7
2	Sampatchak	105,860	7	14	Daniawan	75,074	13
3	Danapur	378,215	20	15	Bakhtiarapur	226,193	16
4	Maner	266,457	19	16	Athmalgola	90,184	8
5	Naubatpur	201,875	19	17	Barh	215,000	13
6	Paliganj	249,063	25	18	Pandarak	138,175	15
7	Dulhin Bazar	124,421	14	19	Belchhi	66,056	7
8	Bikram	168,346	16	20	Mokameh	198,839	15
9	Masaurhi	239,208	18	21	Ghoswari	74,542	8
10	Punpun	137,497	14	22	Bihta	260,430	26
11	Dhanarua	211,167	6	23	Phulwari	272,078	14
12	Fatwah	196,130	15	24	Total	5,772,804	322

2. Aim of the Study

The aim of this data-based research study of Covid-19 cases of Patna district in Bihar is to make an assessment of the scope and distribution of Covid-19, how infected persons and their families coped with it, and measures taken by the Government Agencies and the community in controlling its spread. A number of recommendations are put forward at the end of this report, suggesting a conceptual framework for future handling of such a pandemic.

3. Methodology

As part of the study, examination of the data of 23,344 positive cases, obtained from a private laboratory of Patna, consisting of data on age, sex, district and test result for the period June, 2020 to May 15, 2021 was undertaken. All the tests were RTPCR tests except for 15 tests which were Antigen tests. The other primary data consisted of interviews of 200 persons who tested positive in Patna or a member of their families. This data focused on sociological aspects, as to how families had coped with Covid-19. These persons were selected by personal contacts where one contact led to the other contact. They volunteered to share their experiences once the objective of the study was shared with them. These interviews provided information on the profile, symptoms, measures taken in home isolation, cases of hospitalization, the mental health of the patients, the care taken in post recovery period and the community support.

Another primary data consisted of interviews of State level officials, District level officials, Block Development Officers (BDOs), Medical Officers in Blocks (MOI/Cs), Executive Officers and elected Ward Commissioners of Patna Municipal Corporation (PMC), and elected Mukhiyas or the Panchayat heads. The interviews with the BDOs provided information on the spread and its reasons, the volume and the measures taken to contain spread of Covid-19 in their respective blocks. The interviews with the MOI/Cs provided information on arrangements made for testing and care of patients. The interviews with the Executive Officers and the Ward Commissioners of PMC provided information on the spread and its reasons in their respective Zones and Wards in Patna town. The Mukhiyas provided similar information in respect of their Panchayats. The secondary data of government agencies in public domain and press reports also provided information on the spread and the measures taken to contain it.

The study was restricted to one district of Patna, considering Patna district had highest number of positive cases, relative to other districts.

It must be admitted that the primary data of one private laboratory of Patna town may not be representative enough for the whole district or the State. The samples of rural areas and urban areas in different Blocks were mostly sent to the Government laboratories for testing, the data of which was not available. Moreover, this data cannot give any idea about the persons who were not tested. Further, the interviews with Covid-19 patients may not be representative enough for any quantitative study, considering the method adopted for identification of such persons, viz., personal contact. The other primary data of interviews of officials and public representatives provides information on the basis of first-hand knowledge on Covid-19 management, though of considerable value, can be classed as best as a qualitative data only. In view of these limitations the conclusions drawn cannot be generalized for the entire State, but may help in drawing many lessons for the overall management of such a pandemic in future.

4. Findings of the Study

4.1 Spread and Volume of Covid-19 in Patna district

The State had 6,22,433 cumulative positive cases as on May 12, 2021, of which the Patna district had 1,30,050 cases.¹ Patna town accounted for more than 70 percent of the cases of Patna District.² (Table 3). The number of new cases per day in Patna district went up from 174 as on April 4, 2021 to 3665 on May 6, 2021.³ This number came down to 196 on May 28, 2021.⁴

The data of 23,344 positive cases of Patna town implies that the Sars-Cov-2 virus spread had been severe in this town. The Executive Officers of the PMC mentioned that the cases were reported in all the 75 Wards of the town. They have, however, mentioned an interesting phenomenon of Covid spread — none of the slums in their areas reported a single case of Covid, whereas many VIP areas of town reported a number of cases. They also mentioned that, except for 3-4 persons, none of the 7300 sanitary staff of the PMC who mostly stay in slums or their family members, had been affected by Covid. They also mentioned that all the sanitary staff had been vaccinated. It has been reported on electronic media that the medical experts who visited slums in Delhi have observed that people living in slums enjoy an extra immunity. But this observation has not been proven scientifically. They also mentioned that the Wards near the market areas witnessed more cases, compared to the other Wards.

¹Twitter handle of the Health Department, Government of Bihar

²Dainik Jagaran Patna Edition, May 3, 2021

³Twitter handle of the Health Department, Government of Bihar

⁴Twitter handle of the Health Department, Government of Bihar

**Table 2 : Male and Female Positive Cases in Patna town
from June 2020 to May 15, 2021**

Month	Male Positive Cases	Male Negative Cases	Total	Female Positive Cases	Female Negative Cases	Total
First wave March 2020 to February 2021						
June-20	20	309	329	8	194	202
July-20	368	889	1257	173	413	586
Aug-20	209	1362	1571	85	831	916
Sep-20	40	937	977	22	656	678
Oct-20	108	1060	1168	52	551	603
Nov-20	90	989	1079	37	542	579
Dec-20	70	940	1010	40	599	639
Jan-21	29	903	932	37	647	684
Feb-21	10	656	666	3	425	428
Total	944	8045	8989	457	4858	5315
Second wave from March 2021 to May 2021 (Continuing)						
Mar-21	46	662	708	32	477	509
Apr-21	1176	2160	3336	978	1235	2213
May-21	212	1209	1421	115	738	853
Total	1434	4031	5465	1125	2450	3575
Total Number of Cases	2378	12076	14454	1582	7308	8890

The BDOs have mentioned that almost all the Panchayats in the Blocks had reported positive cases. However, the town area in each Block and the adjoining Panchayats had about 90 percent of the cases. The number of cases reported in each Block of the district is indicated in Table 3. The BDOs have also mentioned that remote Panchayats had only few cases of Covid. It has been learnt that Panchayats in the Tal area of Mokamah Block (where water remains logged for six months in a year) had no Covid case. There were some other Panchayats where no case was reported. The concerned BDOs however admitted that there had not been many testing in these Panchayats. The Mukhiyas of many blocks of the district however mentioned that there had been 20 to 25 deaths in their Panchayats during the months of April and May, 2021. They added that they were not certain whether all these deaths were due to Covid, except in cases where deaths

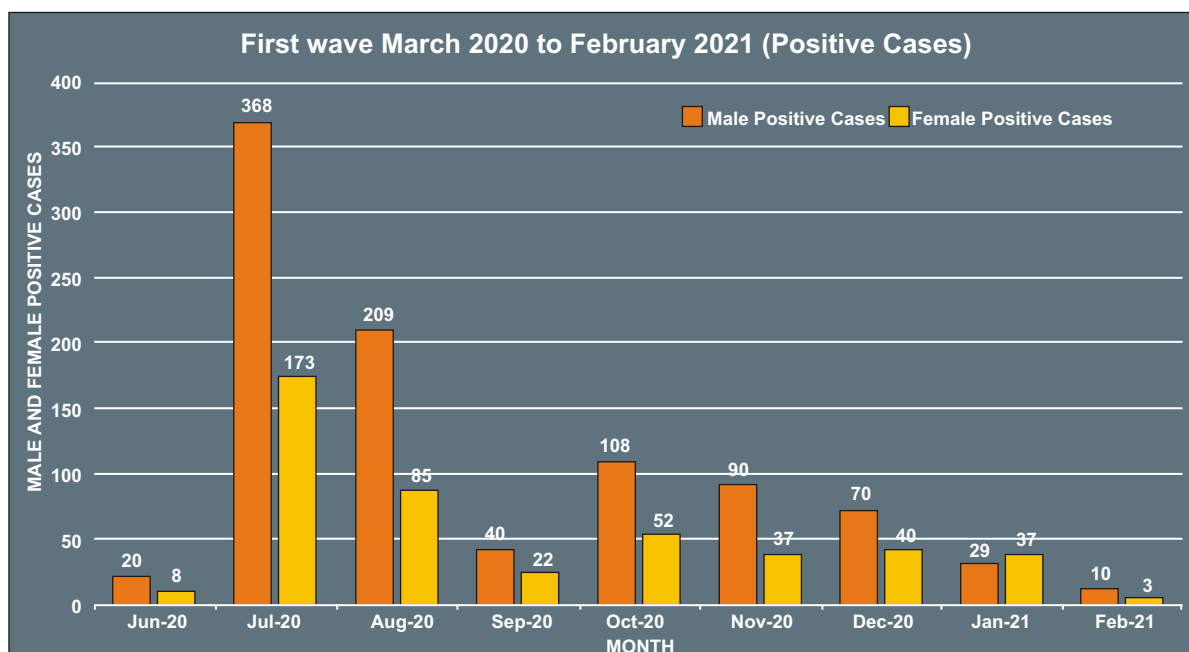
had occurred in the hospitals and the death certificate indicated that the death was due to Covid. It can thus be concluded that the virus had spread mainly to Patna town and urban areas of different Blocks of the district. Regarding rural areas, considering the death of large number of persons in different Panchayats during the period April and May, 2021, it can be said that the virus had spread to rural areas also, but it is difficult to make any estimate of the magnitude of its spread in the absence of any data.

According to the field officers, including the Medical Officers, the first wave of Covid-19 corresponded to the period end of March, 2020 to February, 2021. They mentioned that the first wave had less cases compared to the second wave, which started from the end of March, 2021. They have however mentioned that, during the first wave, testing was not as extensive as during the second wave. So, it is quite possible that many positive cases remained undetected during the first wave.

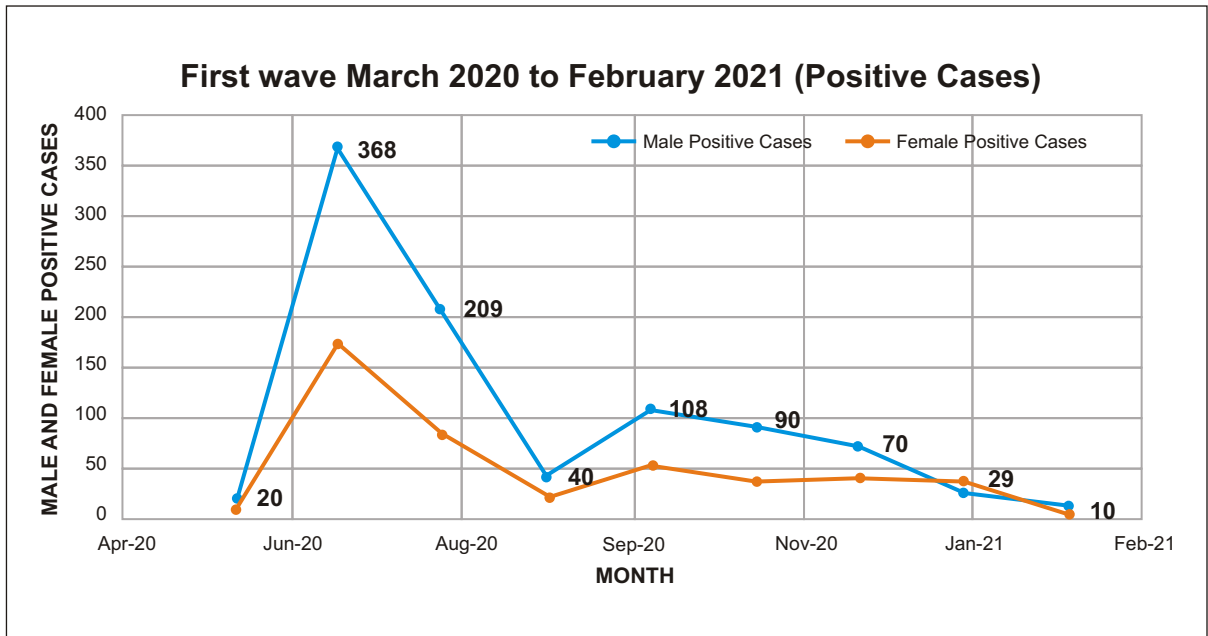
Table 2 and graphs 1, 2 & 3 give the details of month-wise male and female positive cases in Patna town from June, 2020 to May 15, 2021. It is noticed that, during the first wave, 944 males and 457 females had tested positive, whereas in the second wave, 1434 males and 1125 females had tested positive. Table 2 further indicates that 2378 males out of 14454 (16.4 percent) and 1582 females out of 8890 (17.8 percent) had tested positive for the period June, 2020 to May 15, 2021.

This indicates that the number of positive cases in the second wave is more than the first wave. This may be due to the increased testing and also due to increase in the number of cases of infection. It must be admitted that this conclusion is based on the Covid data of Patna town.

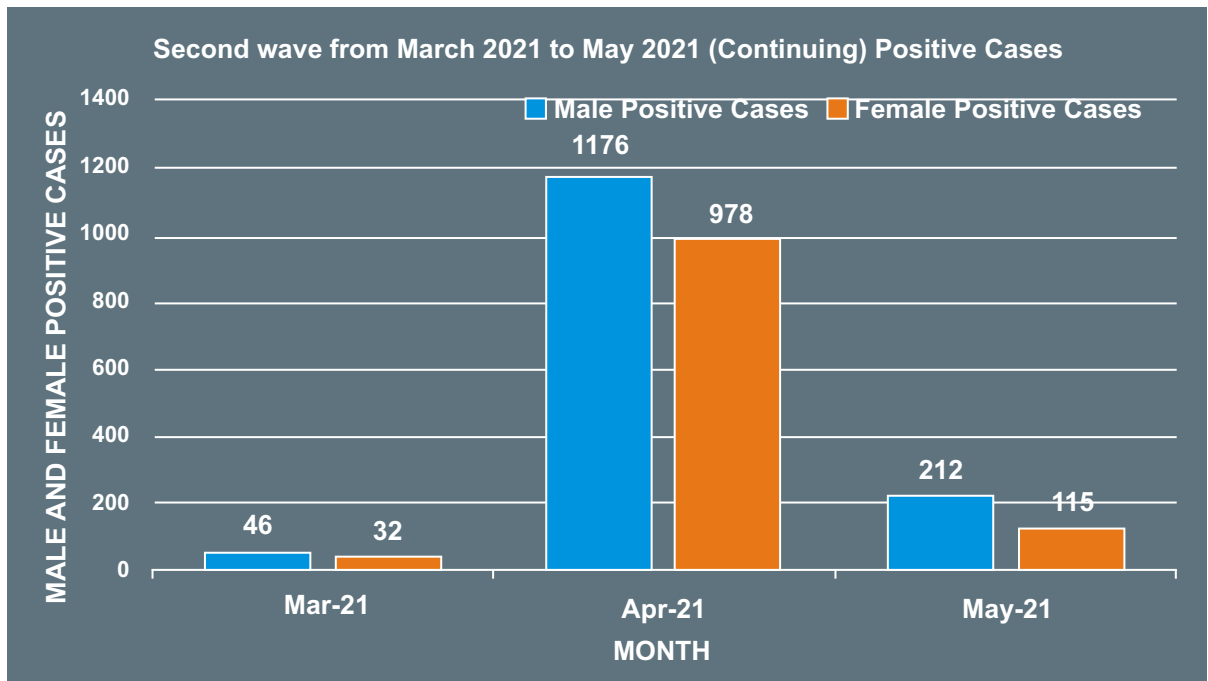
Graph 1



Graph 2



Graph 3



It is noticed from Graph 1, 2 & 3 that the males were tested one and half times more than the females. This may be due to higher numbers of male infection than female infection. This may be also due to preferential treatment they get in the family, on health matters. Lower testing in females may be due to their lack of willingness for testing and their tendency to hide illness. This may also be due to their neglect in the family, on health matters.

It is also noticed from Graph 1 & 2 that during the first wave the male and female positive cases declined gradually from July, 2020 to September, 2020 but it increased rapidly from October, 2020 to December, 2020. This is likely that people did not take precautions as per the protocol during the festivals in these months. This implies that drop in the number of cases does not allow us to take liberties rather one has to remain vigilant for all times, otherwise the spread of virus is likely to increase.

Graph 3 indicates that during second wave the positive cases declined rapidly from April, 2021 to May, 2021. This is likely due to be strict enforcement of lock down measures.

Based on the pattern of decrease and increase of infection in the first wave, it may be observed that the infection is likely to increase in the second wave in the festival months of October, November and December, 2021 unless strict control measures are taken in these months.

Table 3 : Number of Active Cases in 23 Blocks of Patna District⁵

Block	9.2. 2021 Urban areas of Greater Patna	2.5.2021	1.5.2021	30.4.2021
Patna Sadar		10757	10641	9716
Sampatchak	529	560	531	356
Danapur	868	899	961	953
Maner		77	73	68
Naubatpur		87	176	173
Paliganj		201	238	291
Dulhin Bazar	147	196	232	224
Bikram	106	202	229	243
Masaurhi	207	182	193	190
Punpun	123	184	179	181
Dhanarua	133	158	343	137
Fatuha	185	296	293	319
Khusrupur		61	69	64
Daniawan		24	35	33
Bakhtiyarpur	189	211	254	276
Athmalgola	192	199	197	189

Barh	628	744	758	790
Pandarak	105	116	123	112
Belchchi		142	158	167
Mokama	205	233	247	272
Ghoswari		32	23	20
Bihta	261	362	423	418
Phulwari	922	848	870	831
		16771	17246	16023

Table 4 gives month-wise positivity rate for males. It is observed that the male positivity rate varied from 1.5-35.3 percent. Similarly, Table 5 gives the month-wise positivity rate for females. It is observed that the female positivity rate varied from 0.7-44.2 percent.

Table 4 : Male Positivity Rate in Patna town

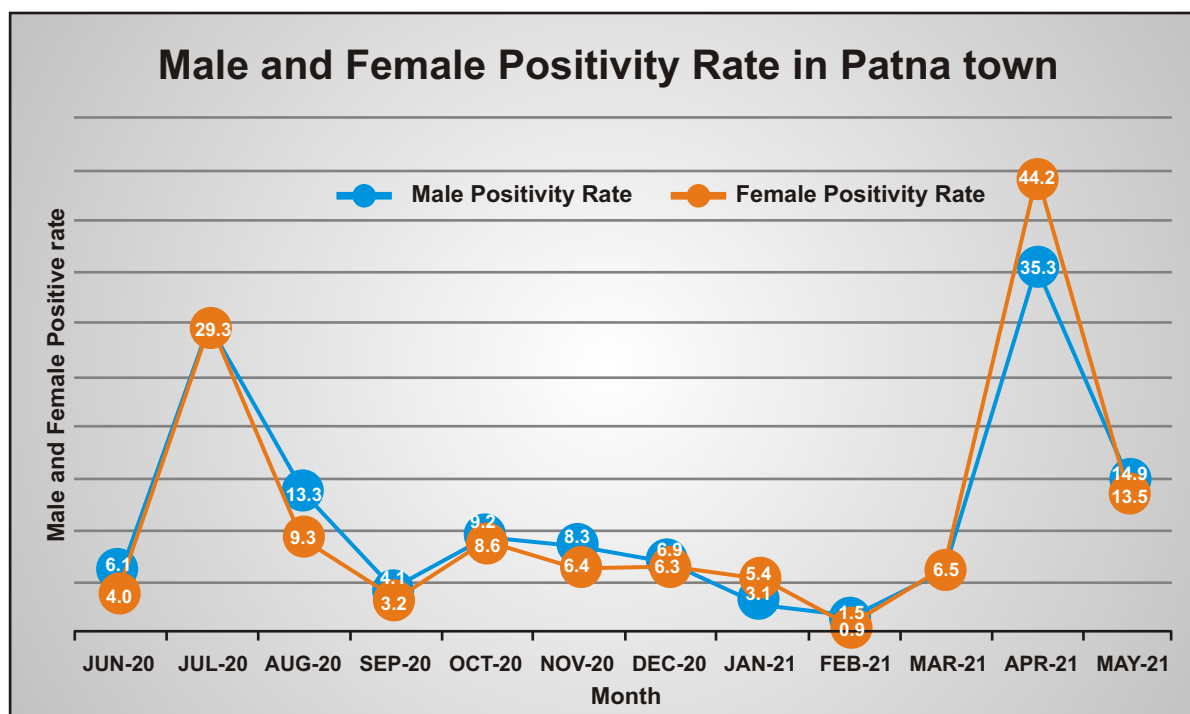
Month	Male Positive Cases	Male Negative Cases	Total	Positivity Rate
June-20	20	309	329	6.1
July-20	368	889	1257	29.3
Aug-20	209	1362	1571	13.3
Sep-20	40	937	977	4.1
Oct-20	108	1060	1168	9.2
Nov-20	90	989	1079	8.3
Dec-20	70	940	1010	6.9
Jan-21	29	903	932	3.1
Feb-21	10	656	666	1.5
Mar-21	46	662	708	6.5
Apr-21	1176	2160	3336	35.3
May-21	212	1209	1421	14.9
Total Number of Cases	2378	12076	14454	11.5

Table 5 : Female Positivity Rate in Patna town

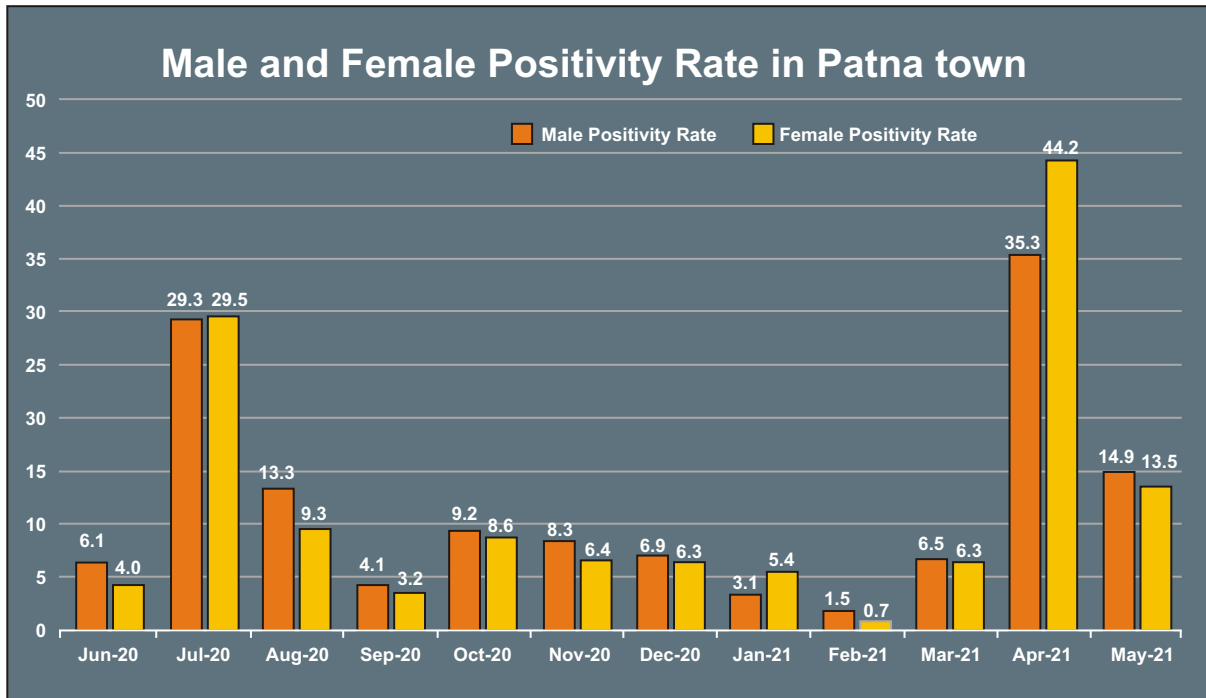
Month	Female Positive Cases	Female Negative Cases	Total	Positivity Rate
June-20	8	194	202	4.0
July-20	173	413	586	29.5
Aug-20	85	831	916	9.3
Sep-20	22	656	678	3.2
Oct-20	52	551	603	8.6
Nov-20	37	542	579	6.4
Dec-20	40	599	639	6.3
Jan-21	37	647	684	5.4
Feb-21	3	425	428	0.7
Mar-21	32	477	509	6.3
Apr-21	978	1235	2213	44.2
May-21	115	738	853	13.5
Total Number of Cases	1582	7308	8890	11.4

Graph 4 & 5 give the male and female positivity rate in Patna town

Graph 4



Graph 5



It may be noted that the positivity rate for both male and female in all the months is more or less same. It implies that both male and female are equally susceptible to infection. It may be noted that the positivity rate for both male and female is about 11.4 percent on average.

4.2 Profile of the Covid Positive Patients

Table 6 gives the age-wise and month-wise breakup of male positive cases. It may be noted that, out of 2378 male positive cases, 913 were in the age-group 21-40 years and 874 in the age-group 41-60 years. Further, there were 58 positive cases in the age-group less than 10 years, 129 positive cases in the age group 10-20 years and 404 cases in the age-group more than 60 years.

It is observed that the maximum number of male positive cases were in the month of July, 2020 and April, 2021 in the age-group 21-40 years and 41-60 years. In the month of July, 2020, out of 368 cases, 136 cases (36.9 percent) were in the age-group 21-40 years and 148 cases (40.2 percent) in the age-group 41-60 years. In the month of April, 2021, out of 1176 cases, 478 (40.6 percent) were in the age-group 21-40 years and 429 in the age group 41-60 years (36.5 percent).

Table 6 : Age-group-wise Male Positive Cases in Patna Town

Month	Male Positive Cases	Age Less than 10	10 to 20	21 to 40	41 to 60	More than 60	Total
June-20	20	0	7	8	5	0	20
July-20	368	7	18	136	148	59	368
Aug-20	209	5	9	67	50	78	209
Sep-20	40	0	2	12	20	6	40
Oct-20	108	4	6	40	46	12	108
Nov-20	90	2	0	34	34	20	90
Dec-20	70	2	2	33	23	10	70
Jan-21	29	1	1	12	10	5	29
Feb-21	10	0	1	3	6	0	10
Mar-21	46	2	4	13	23	4	46
Apr-21	1176	31	63	478	429	175	1176
May-21	212	4	16	77	80	35	212
Total Number of Cases	2378	58	129	913	874	404	2378

Table 7 gives the age-wise and month-wise breakup of female positive cases. It may be noted that, out of 1582 female positive cases, 778 were in the age-group 21-40 years and 490 in the age-group 41-60 years. Further, there were 11 positive cases in the age-group less than 10 years, 59 positive cases in the age-group 10-20 years and 244 cases in the age-group more than 60 years.

Table 7 : Age-group-wise Female Positive Cases in Patna Town

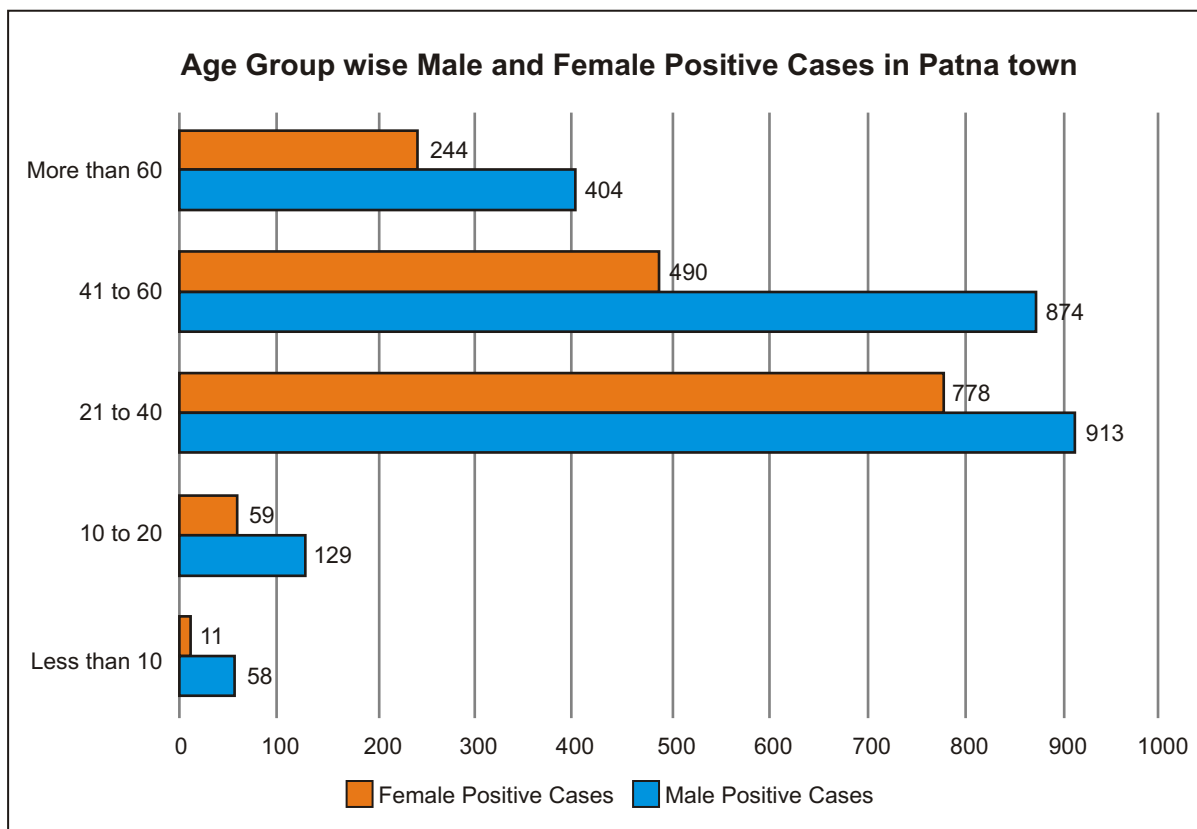
Month	Female Positive Cases	Age Less than 10	10 to 20	21 to 40	41 to 60	More than 60	Total
June-20	8	0	1	4	2	1	8
July-20	173	0	10	82	57	24	173
Aug-20	85	1	5	42	15	22	85
Sep-20	22	0	2	12	5	3	22
Oct-20	52	0	1	25	14	12	52
Nov-20	37	0	1	26	7	3	37

Dec-20	40	0	1	20	12	7	40
Jan-21	37	0	1	14	9	13	37
Feb-21	3	0	0	2	0	1	3
Mar-21	32	0	0	13	10	9	32
Apr-21	978	9	34	490	314	131	978
May-21	115	1	3	48	45	18	115
Total Number of cases	1582	11	59	778	490	244	1582

It is observed that the maximum number of female positive cases were also in the month of July, 2020 and April, 2021 in the age-group 21-40 years and 41-60 years. In the month of July, 2020, out of 173 cases, 82 cases (47.4 percent) were in the age-group 21-40 years and 57 cases (32.9 percent) in the age-group 41-60 years. In the month April, 2021, out of 978 cases, 490 (50.1 percent) were in the age-group 21-40 years and 314 in the age-group 41-60 years (32.1 percent).

Graph 6 gives age-group-wise male and female positive cases in Patna town.

Graph 6



It can, therefore, be inferred that the younger population as well as the middle-aged population were mostly infected, as they had to go out for business, jobs, studies, marketing, travel, entertainment and other purposes. "According to 2011 Census, Bihar's median age was 20 in 2011, and is expected to be 29 years by 2026."⁶ It implies that younger age group population may remain vulnerable in the future pandemics also.

The data of infection of children and the adolescents indicate that these categories of population are also vulnerable. The data of the 200 Covid patients interviewed also corroborates these findings.

4.3 Reasons for Infection

In view of the Covid outbreak in the country, the national lockdown was enforced from March 24, 2020 to May 31, 2020. It had been reported that, because of lockdown, 15,00,612 migrants returned to Bihar.⁷ They faced untold hardship during their return. They were quarantined in Isolation centres and were allowed to go to their villages only after the quarantine period of 14 days. Some migrants might have reached their villages bypassing the Isolation centres. In many villages, the Mukhiyas and other villagers did not allow the migrants to go to their homes directly and insisted that they stayed in Isolation centres set up in the villages.

Despite the return of such large number of migrants, there had not been any major spread of virus due to them. The data of June, 2020 shows that there were only 329 positive cases in Patna town. It must be admitted that this data may not be reflective of the entire district. The BDOs also confirmed that there had not been any major spread of virus due to the arrival of the migrants. Many BDOs mentioned that many persons returned to Bihar after the national lockdown was eased. They also mentioned that lack of awareness about social distancing and wearing of mask resulted in the quick spread of virus. They mentioned that intermingling of people in the busy markets, marriages and other social functions contributed largely to this spread. One BDO observed that infection amongst ladies increased during marriages as there is a custom in Bihar of group singing by the ladies, for the whole night for a few days before the wedding date.

All the BDOs and the Mukhiyas categorically stated that the Patna town had been the epicentre of virus spread and the virus had spread to their areas from there.

⁶<https://scroll.in/artcle/817524/uttar-pradesh-and-bihar-are-indias-youngest-states>

⁷ Statement referred to Part(a) of Lok Sabha USQ No. 174 due for reply On 14.09.2020

They mentioned that the people from all areas come to Patna every day for various purposes, some of them catch infection in Patna and may spread it later in their areas.

During the second wave, the migrant labourers did not return to Bihar in large numbers. But many families returned to Bihar during the Holi festival, which is one of the most important festival for Bihar. This festival was celebrated in Bihar from March 26 to March 30, 2021. The Holi celebration this time was a low-key affair, as it was not allowed to be celebrated in public places. The Holi festival, as such, may not have contributed much to the spread of the virus, but the arrival of a large number of persons during Holi could have contributed to its spread. Further, markets and offices remained open. Secondly, there was no restriction on the movement of people. Use of mask had increased during the second wave, but still many people did not use masks. All these factors could have contributed to the spread of virus during the second wave. These observations get corroborated considering the large number of positive cases in Patna town in April, 2021.

In view of the spread of Covid cases, lockdown in the State was imposed from May 5, 2021 and continued till June 8, 2021, which helped greatly in checking the spread of virus as is reflected in the decrease in daily new cases in the district from 3665 on May 6, 2021 to 196 on May 31, 2021.⁸

5. How Families Coped with Covid-19

5.1 Symptoms

Most of the persons interviewed mentioned that it started with fever. They also mentioned that they had sore throat. But almost all of them mentioned that they felt extremely weak. Many complained of loss of smell and taste. In a few cases, they had breathing difficulties and had to be hospitalized.

5.2 Home Isolation

Of the 200 Covid patients interviewed, more than 90 percent of them stated that they didn't need to get hospitalized or need the services of any Covid Isolation/care centre and decided to stay at home in isolation after testing positive. Either a room or a portion of the house was used by the patient. Where more than one member of a household tested positive, the same room was shared by all the patients. In households with two floors, one floor was used by the Covid patients and the other floor by the rest of the family members. Many persons mentioned that it was particularly difficult to manage the children below 5 years,

⁸ Twitter handle of the Health Department, Government of Bihar

when the mother was also infected. In some cases, the children were sent to their relations. But the majority of the children stayed with their parents with the associated risks. In households with single washroom, it was disinfected after every use. In rural areas the patients either stayed in a room in the courtyard or in the out-house.

In about 10 families, all the members of the household got infected one after the other. It was seen that when one member of the household got infected from the work place or otherwise, by the time it was detected, it had already spread to other members. "It was noticed in a particular case that where the office drivers shared one room to rest, when one of them got infected, all the three others also got infected in few days and one of the drivers had to be hospitalized where he died after 20 days of struggle". These findings corroborate the fact that the virus had primarily spread through human contact.

It was noticed that most of the people thought that they were suffering from common flu and they would get well in a few days time like in the past. When fever and other symptoms persisted, some would get tested on medical advice. But many would neither take any medical advice, nor go for testing. Some would lock themselves in their homes to hide the fact from their neighbours that they had Covid. One BDO mentioned that, in the rural areas, many families avoided testing as they feared that if they tested positive, they would face boycott from the rest of the community.

"In one particular case an aged couple who lived alone ignored their infection and did not let anybody know and ultimately when the help came it was too late and both lost their lives". Similarly, "in another tragic case, a couple with no resources including a mobile phone could not inform anybody about their sickness and when the BDO came to know about them, it was too late and they lost their lives." These particular cases highlight the limitations of families to cope with the virus.

The patients in home isolation got medical advice from the doctors in the family or other doctors whom they came to know through friends. Some patients had even taken steroids at home on the advice of the doctors on phone. It was observed that many patients also had resorted to home remedies and other form of medicines along with the allopathic medicines. Many patients mentioned that everybody in the family used masks at home when anyone got infected. Further, they had stopped any outside help for the domestic work.

They also mentioned that the neighbours and friends avoided meeting them even

after when they had recovered. They mentioned that, due to Covid, all social norms had broken and communication through social media became the order of the day. Families where one member had to be hospitalized had to face immense problem of locating a hospital and finding a bed. They first tried the Government hospitals failing which they tried the private hospitals. Further, the medical expense in private hospitals was matter of worry for them. Further, there was always a risk of bringing infection home from the hospital. The expenses incurred in private hospitals varied from hospital to hospital, ranging from Rs 4-10 lakh for a period of 10-20 days.

Most of the persons recovered in home isolation in about three weeks. Even after recovery, the weakness persisted. They had to continue medicines for a long period of time. Further, they had to take protein-rich diet. Some in home isolation had to be shifted to hospital when their condition deteriorated. There had been three deaths in the families interviewed. Most of the persons reported that they and their family members had suffered from acute depression for the entire period of illness. This was mitigated to some extent by prayers, meditation and yoga.

6. Covid Deaths

There has been 9429 Covid deaths in the State as on June 9, 2021, of which Patna district accounted for 2303 deaths.⁹ The numbers reported might have missed many deaths as the death figures are reported not only from the Government hospitals but also private hospitals and deaths at home. "The Health Department had sought detailed report about deaths from all concerned."¹⁰ It is learnt that 70 percent of the deaths were in the age-group of more than 60 years in the first as well as the second wave. Patna district witnessed deaths of doctors, members of Legislative Assembly, officers, journalists, professors, police personnel and many others. "As many as 120 doctors lost their lives — 42 in the first wave last year and 78 in the second one this year."¹¹

All the health workers were covered under the Pradhan Mantri Garib Kalyan Insurance Scheme for the Health Workers, under which a compensation of Rs. 50 lakh is to be paid for deaths due to Covid. The State Government has announced a compensation of Rs. 4 lakh for deaths due to Covid of any person. Further, the State Government has announced that, in case of death of any Government

⁹ Twitter handle of the Health Department, Government of Bihar

¹⁰ DainikJagaran Patna Edition, May 19, 2021

¹¹ Hindu Patna Edition dated May 16, 2021

servant on duty due to Covid, their family would be entitled to a Special Family Pension every month equivalent to the salary the concerned servant would have drawn till retirement, provided the family members do not opt for compassionate appointment.

7. Measures Taken by the State Government

7.1 Preparedness

The Health Department had issued guidelines to check spread of Sars-Cov-2 virus on February 24, 2021.¹² Arrangements were made for testing, isolation centres, additional beds in hospitals, and quarantine centres. The Health Department cautioned people to be vigilant in view of the fast spread of the virus. "It was mentioned that from March 27, 2021, in 8 days 4000 persons were infected."¹³ A target of 1 lakh testing per day was set. AIIMS, Patna, NMCH and PMCH were declared as dedicated Covid hospitals. Later, IGIMS was also declared as a dedicated Covid hospital. All the frontline workers were vaccinated in February and March, 2021.

7.2 Arrangements for Containing Spread and Care of Covid Patients

The State Government followed the principle of tracing, tracking and testing of persons having Covid symptoms. The Containment Zones were created in areas where a number of cases of Covid were noticed. In rural areas, posters were pasted on the houses with Covid patients and micro containment zones were set up. Use of mask was made mandatory in public places. "The Divisional Commissioner, Patna stated that testing in 66 government centres had been arranged. In addition, 6 Mobile testing teams were working and testing in 20 private hospitals and laboratories had been arranged."¹⁴

The lockdown measures during the first wave and the second wave were strictly enforced. The sanitary measures were intensified in Patna town. In villages where a number of cases were noticed, the entire population was tested and the village sanitized. Further a system was put in place to monitor health status of patients in home isolation and also to make available a medicine kit.

In addition, following decisions were taken to strengthen the health system: "Direction was issued to revive 1556 additional PHCs which had closed."¹⁵

¹² DainikJagaran Patna Edition, February 24, 2021

¹³ DainikJagaran Patna Edition April 6, 2021

¹⁴ DainikJagaran Patna Edition April 6, 2021

¹⁵ DainikJagaran Patna Edition May 19, 2021

"Decisions was taken to appoint 2580 doctors on contract basis."¹⁶ "It was decided that services of MBBS, BSc Nursing final year students would be taken for Covid care."¹⁷ "It was decided that services of 15000 trained Rural Health Workers would be taken for Covid care."¹⁸

In addition, the names of doctors and their telephone numbers were notified in the press, so that persons in home isolation could take their advice. IMA (Bihar Chapter) had also notified names of doctors who were available for consultation on phone. "An App for home isolation tracking (HIT) was launched through which Health Workers would visit patients in home isolation and check their temperature and oxygen levels, and if need be, help them in their hospitalization."¹⁹

It may be useful here to consider how the decisions of the State Government had been implemented at different levels. It was learnt that, while more than 50 percent of tests in Patna town were RTPCR tests, more than 70 percent of the tests were Antigen tests in different blocks. Many MOI/Cs mentioned that while RTPCR test was a more reliable test, Antigen tests helped them in quick screening of Covid patients. They further added that the persons tested were satisfied as the result was readily available. They opined that, as a strategy, persons having symptoms should be first tested through Antigen test and, if symptoms persist, they can be subjected to RTPCR test.

The ANMs who were trained had mastered the technique of collecting samples. The samples for the RTPCR collected on a day were kept in the cold chain in the PHC and sent to the designated laboratories on the next day, after necessary data entry in the portal. Initially, testing took considerable time in these laboratories. The test results were available only after 6 to 7 days. It was learnt that this delay was due to closing of some government testing facilities for sanitization for some days. It has now been learnt that from May 1, 2021, the test results were available in 48 hours. The Bio Medical waste (BMW) of Antigen testing were brought to the PHC and burnt or buried in a pit.

The Isolation Centres with oxygen facility had helped many patients. They could also get advice from the doctors attached to these centres. Finding a bed in any hospital in the peak period of Covid from April 15, 2021 to May 1, 2021 was a

¹⁶ Dainik Jagaran Patna Edition May 12, 2021

¹⁷ Dainik Jagaran Patna Edition May 10, 2021

¹⁸ Dainik Jagaran Patna Edition May 19, 2021

¹⁹ Dainik Jagaran Patna Edition May 18, 2021

nightmare in Patna town, like in many other cities in the country. Further, there was an acute shortage of oxygen in this period. But the position eased after May 1, 2021. It has been learnt that, in the rural areas, many people had taken the help of Rural Health Practitioners (RHP). Some RHPs had taken care of 500-600 persons in a week and the majority of them got cured. Some of the patients who had complications were referred to hospitals by them.

It is learnt that about 15 percent of the frontline workers and some of the doctors were infected, despite both the doses of vaccine. But they recovered in about 6-7 days and they rejoined their duty soon after testing negative, in public interest, despite weakness. It is the general perception that persons who have been vaccinated are immune from all infections and they do not take the necessary precautions.

7.3 Vaccination

Vaccination started in the State in February, 2021. The frontline workers were vaccinated first. The senior citizens above 60 years were covered in the first phase. Those above 45 years were covered next. The vaccination for the age-group 18-45 years was taken up subsequently. In all, 18,69,906 persons were vaccinated till March 21, 2021 which rose to 99,85,609 on May 24, 2021.²⁰ There is lot of enthusiasm for vaccination in the urban as well as rural areas. The Ward Commissioners and the Mukhiyas are taking keen interest in organizing vaccination camps. But it has also been learnt that in some areas there had been spread of misinformation that vaccination may lead to death and other complications. It is learnt that correct protocol is not being followed in some blocks for the disposal of bio-medical waste relating to vaccination.

8. Conclusion and Recommendations

Bihar saw a major outbreak of Covid-19, but due to the steps taken by the State Government, it could be controlled within a short span of time. It is admitted that there had been a crisis of hospital beds and other support due to the sudden surge in the number of cases from April 15, 2021 to May 1, 2021, but the situation eased due to the steps taken by the State Government. Further, the spread in rural areas could also be contained. What needs to be appreciated is that frontline workers, entire health cadre, all wings of administration and elected representatives worked as a team, 24×7 for the entire period, as a result of which such a major outbreak of pandemic in the State could be contained. The following

recommendations for further action made are intended to strengthen efforts to handle such a pandemic in future.

(a) Health Disaster

The Government of India declared Covid-19 as a national disaster in March, 2020. Covid-19 has proved that its propensity is no less than any other disaster. Hence, preparedness and its mitigation need to be planned and resources allocated like for any other disasters. It will be useful to prepare Health Disaster Management Plans and Standard Operating Procedures (SOPs) based on the experience of Covid-19 and continuously updating those plans based on new evidence to enhance epidemic preparedness in the state. The SOPs should include constitution of Emergency Operating Centre and the Technical Advisory Committee at the State and the District level.

(b) Vaccination

Vaccination is the primary need to stop future spread of Covid. It is a difficult programme, considering the vast area and the vast population of the state . In order to cover maximum population, the availability of vaccines needs to be ensured. Further, additional centres for vaccination and vaccine camps may be necessary. In addition, misinformation regarding vaccine in specific areas needs to be countered.

(c) Strengthening of Health Infrastructure

The health infrastructure needs to be strengthened at all levels. To begin with, APHCs need to be strengthened. The State Government has decided to revive all the closed APHCs. This would help in providing health service nearer to the villages. There may be a need to create more APHCs. The PHCs, CHCs and the District Hospitals also need to be strengthened. Efforts should be made to ensure that Antigen Testing is possible at the APHCs. In order to strengthen the health infrastructure, it may be necessary to increase the budgetary allocation for the health sector in the state.

(d) Paediatric Health Infrastructure

While strengthening the health infrastructure one must keep in mind the possibility of a third wave. Medical experts have opined that the children are likely to be affected most in the third wave. It will be therefore necessary to have a Super Specialty Paediatric Hospital in Patna. Further in each health facility special wards for the children need to be established.

(e) Strengthening of System of Disease Surveillance and Laboratory Testing Infrastructure

In order to strengthen tracing, tracking and testing of communicable diseases and mount rapid management strategies at the community level it would be appropriate to strengthen disease surveillance system. The system should utilize digital tools to capture information on real-time basis and check rapid transmission of infectious disease. In this regard full advantage should be taken of the ongoing Integrated Disease Surveillance Program (IDSP) through proper training of key officials.

Laboratory testing infrastructure also needs to be strengthened.

(f) Public Health Management Cadre

Considering the emerging importance of public health in view of Covid and other diseases it would be desirable to have a Public Health Management Cadre at the state, district and the block level. Such a cadre could be trained on all aspects of public health.

(g) Additional Manpower and Rationalization of Manpower

The doctors, nurses and ANMs play the most important role in any health system. The State Government has decided to appoint additional doctors and the para medical staff. The existing manpower needs to be rationalized so that no unit is bereft of adequate manpower. The State Government has also decided to take the services of Rural Health Workers. This would help in augmenting the manpower at times of need. It was noticed that there was an acute shortage of laboratory technicians in all the PHCs. A laboratory technician plays the most important role in testing. It would thus be necessary to fill up all the vacancies of laboratory technicians and, if need be, create additional posts. Further, it would be necessary to place the services of data entry operators, considering the volume of data entry in each health facility.

(h) Data Management in Health Facility

Health data is extremely important in the management of any health crisis. It will be necessary to have a Data Management Team in the health facilities. This team could be trained for data collection, reporting and analysis of the data.

(i) Monitoring of Cases of Home Isolation

More than 90 percent of Covid patients stayed at home and recovered. They could get medical advice on informal basis from doctors whom they could contact

through some device. A formal system needs to be put in place so that patients can get 24×7 medical advice. For rural areas, some doctors in PHCs should be earmarked for such a purpose. A protocol needs to be developed for the use of medicine on the advice of doctors for patients in home isolation.

(j) Involvement of Panchayati Raj Institution in Health Crisis

One of the focus of the Panchayati Raj institutions should be management of health crisis. This may include setting of quarantine centres, isolation centres, testing facilities, vaccination facilities, and care of patients. The Finance Commission grants for the Panchayats should be used for creating health infrastructure in the Panchayats.

(k) Establishing Linkage with RHP and Other Private Doctors

It was noticed that RHPs had played an important role in taking care of patients in the rural areas. These RHPs in villages enjoy the trust of the people and, with their experiences, they could cure many patients with mild symptoms at the early stage. Similarly, the regular doctors in private practice in rural areas also played an important role. It is necessary to establish a linkage with them so that their services could also be utilized in times of crisis. Considering the huge number of RHPs and their presence in almost every panchayat, such a linkage may be useful. It is learnt that such an initiative has commenced in the State of West Bengal.

(l) Panchayat Health Map

It may be useful to prepare a health map for each panchayat. Such a map should contain information on health infrastructure and manpower available in the Panchayat. The names and contact numbers of concerned persons, including RHP, private doctor and elected representatives should be indicated in the map. It should also contain a brief record of pockets, where a number of Covid cases had been noticed. It should also record possible causes for such a spread in those pockets. The State Government could consider providing adequate funding from the Finance Commission Grants for Health Planning at the Panchayat level.

(m) Regional Focus on Health Crisis Management

It may be useful to adopt a regional strategy in a pandemic like Covid-19. It has been seen that the pandemic had affected different States at different period of time. A regional strategy will help checking its spread from one State to the other. Further, it would help in pooling and sharing of resources.

(n) Health Forecast System

It may be useful to establish a Health Forecast System at the national level and also at the regional level for a pandemic like Covid. Timely forecast by such units will allow the States to take necessary measures well in time to contain its spread. Further such a forecast on area specific basis in a State will help to stop its spread within the State. Real time data of infection on day-to-day basis from specific areas and States will be most useful for such forecasts and serve the same purpose as the satellite images for weather forecasts.

(o) Research on Public Health

The research on public health will help in learning from the experience of one another. It would be important to streamline data collection and data sharing mechanism at the national level and in the States.

(p) Training

Existing manpower should be retrained in Public Health, keeping in mind different aspects of Covid-19. A scheme can be thought of identifying young boys and girls in every Panchayat who would be interested to work as health volunteers in times of crisis. A specific training programme can be organized for them. The women Self-Help Groups (SHGs) under Jeevika project can be trained in Public Health. In every Panchayat, there are many SHGs and all the members of these SHGs are highly motivated.

(q) National and Regional Level Workshops on Covid

National and regional level workshops on Covid will help in understanding different aspects of Covid. Such workshop will enable the young doctors and others to learn from the experiences of eminent doctors who have handled large number of Covid cases.

(r) Disposal of Biomedical Waste

It was noticed that adhoc arrangements were made for disposal of bio-medical waste of testing as well as vaccination. This may lead to spread of virus unknowingly. A suitable protocol should be laid down so that even at the PHC level disposal of waste could be handled scientifically. Necessary equipment for safe disposal should be made available in every PHC.

The Centre for Health Policy (CHP) at the Asian Development Research Institute (ADRI) has been set up with support from the Bill & Melinda Gates Foundation to strengthen the health sector in Bihar with a multidimensional and multi-disciplinary approach. Its aim is to engage in rigorous analysis of the health system and inform policy makers to fine-tune interventions for even stronger outcomes.

- Research and Analytical Studies

It constitutes the core of CHP's activities. The areas of research include health infrastructure and delivery with emphasis on equity, health outcomes such as IMR, MMR, TFR and its predictors, health financing, private-public partnerships, regulatory framework and its implementation, and other issues which might emerge.

- Informing Policymakers on Strengthening the Existing Health System

CHP aims to be the trusted partner of the state Government in providing evidence-based inputs in making the health system stronger, resilient and equitable.

- Sustainable Health Solutions

CHP recognizes the need for establishing a strong health system which will be self-sustaining. It means immunity to natural disasters/calamities, financial uncertainties and other unanticipated factors. These pillars may be interrelated; CHP will provide a framework of synergy among actors working on these pillars.

- Collaboration

CHP engages in collaboration with an extensive network of academic and policy research institutions both in India and abroad in health and the broader social sciences.