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# ASSESSMENT OF PUBLIC HEALTH SERVICES IN PATNA DURING COVID-19

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**Abstract**

In the 21st century the whole world is being witness of high level scientific development, technical advancement in all social, economic aspects of people's lives. The confidence this century brings in lives of people is unmatchable, the world has answer of every problem but the unprecedented COVID-19 outbreak made the whole world helpless and extremely afraid of death. Like the entire world the whole India severely suffered COVID-19. This research paper deals with condition of Patna district of Bihar during Covid-19. In this tranche the paper also focuses on the public health services and strategies adopted by state and Indian government and its implementation in Patna district.

**Keywords:** *COVID-19, Outbreak, Pandemic, Public Health, Death.*



## 1. INTRODUCTION

Bihar, located in the eastern part of India, shares borders with Nepal in the north, West Bengal in the east, Jharkhand in the south, and Uttar Pradesh in the west. As of the 2011 census, Bihar has a population of 10.41 crore (104.1 million). The state is comprised of 38 districts, each of which is further divided into blocks. Additionally, each block consists of several panchayats. Patna District, with a population of 58.38 lakh (5.8 million), includes 16.84 lakh (1.68 million) residing in Patna town. This district is divided into 23 blocks (refer to Map 1). Information about the population and number of panchayats in each block within Patna district, a panchayat typically encompasses 3 to 4 villages, with a population ranging from 8,000 to 12,000. Within Patna, there is the Patna Municipal Corporation (PMC) which is divided into 6 zones and 75 wards. In terms of healthcare infrastructure, Bihar has 11 medical colleges, including AIIMS Patna. The healthcare system consists of various facilities such as district hospitals (36), referral hospitals (67), sub-divisional hospitals (54), primary health centres (533), additional primary health centres (1393), and sub-centres (9949).

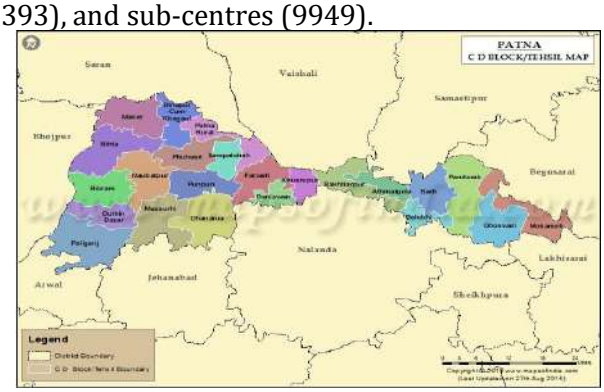


**Fig-1: Source** (https://www.mapsofindia.com/maps/bihar/tehsil/patna.html)

The initial COVID-19 case in Bihar, India, was detected in Munger on 22nd March 2020. The patient was a 38-year-old individual who had recently traveled to Qatar. Unfortunately, he also became the state's first COVID-19 fatality. According to the Ministry of Health and Family Welfare, as of 4th August 2020, Bihar had recorded a total of 62,031 COVID-19 cases. Among these cases, there were 20,922 active cases, 349 deaths, and 40,760 recoveries. The virus had spread across all 38 districts of the state, with Patna district reporting the highest number of cases **(MoHFW., 2021)**. The objective of this research study, based on data, is to evaluate the extent and spread of COVID-19 in Patna district, Bihar. It also aims to analyze how individuals and their families affected by the virus managed the situation, as well as examine the measures implemented by Government Agencies and the local community to control its transmission. The report concludes by presenting several recommendations that propose a conceptual framework for effectively addressing similar pandemics in the future.

## 2. THE COVID-19 OUTBREAK IN PATNA DISTRICT

As of May 12, 2021, the state of Bihar had a total of 622,433 cumulative positive cases of COVID-19. Out of these cases, Patna district alone accounted for 130,050 cases, which represents a significant portion of the total cases in the state. Notably, Patna town contributed to more than 70 percent of the cases within Patna district. The data also reveals an alarming increase in the number of new cases reported daily in Patna district. On April 4, 2021, the district recorded 174 new cases in a single day. However, this number surged to 3,665 new cases per day by May 6, 2021. This sharp rise in cases within a short period underscores the rapid spread and severity of the COVID-19 outbreak in the district **(Saha, K.C., 2021)**. According to the data from Patna town, there were 23,344 confirmed cases of Sars-Cov-2 virus, indicating a severe spread of Covid-19 in the town. The PMC's Executive Officers noted an interesting trend in the spread of the virus. Despite cases being reported in all 75 Wards of the town, not a single case was reported in any of the slums, while several cases were reported in VIP areas. They also highlighted that out of the 7300 sanitary staff members of the PMC, who mostly reside in slums along with their families, only a few (3-4) were affected by Covid-19. It is worth mentioning that all the sanitary staff had received vaccination. There have been reports in the media that medical experts visiting slums in Delhi observed a possible additional immunity among slum dwellers, but this observation lacks scientific confirmation. Furthermore, the Wards near market areas experienced a higher number of cases compared to other Wards. Based on the accounts of field officers and medical professionals, the initial wave of Covid-19 occurred from March 2020 to February 2021. They observed that the first wave had fewer cases compared to the second wave, which began in March 2021. However, during the first wave, testing was not as extensive as during the second wave, potentially resulting in many undetected positive cases. A comprehensive analysis of monthly data for positive Covid-19 cases in Patna town from June 2020 to May 15, 2021 reveals interesting patterns. In the first wave, 944 males and 457 females tested positive, whereas in the second wave, the numbers increased to 1434 males and 1125 females. Table 2 also shows that out of a total of 14,454 males, 2378 (16.4 percent) tested positive, while out of 8,890 females, 1582 (17.8 percent) tested positive during the period from June 2020 to May 15, 2021. These findings indicate that the second wave had a higher number of positive cases compared to the first wave. This could be attributed to increased testing efforts and an actual rise in infection cases. It's important to note that this conclusion is drawn from the specific Covid-19 data of Patna town **(Dainik Jagran, Patna Edition., 2021)**.

## 3. REASONS BEHIND THE SPREAD OF COVID-19 IN PATNA

The given passage describes the situation during the national lockdown in India due to the COVID-19 outbreak. It states that from March 24, 2020, to May 31, 2020, the country was under lockdown, and as a result, 1,500,612 migrants returned to Bihar, a state in India. These migrants faced numerous hardships during their return and were quarantined in isolation centers for 14 days before being allowed to go to their villages. However, it is mentioned that some migrants might have bypassed the isolation centers and directly reached their villages. In many villages, the local leaders called Mukhiyas and other villagers did not permit the migrants to go home directly and insisted that they stay in isolation centers established in the villages. Despite the large number of returning migrants, there was not a significant spread of the virus attributed to them. The data from June 2020 indicates that there were only 329 positive cases in Patna town, although it is acknowledged that this data might not represent the entire district. The Block Development Officers (BDOs) confirmed that the arrival of migrants did not result in a major spread of the virus. They mentioned that the quick spread of the virus was primarily due to the lack of awareness about social distancing and mask-wearing, as well as people gathering in busy markets, attending weddings, and participating in other social functions. One BDO observed that infections among women increased during weddings due to the tradition of group singing by ladies for several nights before the wedding date. Additionally, it is stated that Patna town was the

epicenter of the virus spread, and it spread from there to other areas. Overall, the passage highlights the challenges faced by migrants during the COVID-19 lockdown, the efforts taken to quarantine them, and the factors contributing to the spread of the virus in Bihar, including lack of awareness and social gatherings. During the second wave of the COVID-19 pandemic, it is mentioned that many people from various areas visited Patna for different purposes. Some of these individuals caught the infection in Patna and may have spread it later in their own areas. While migrant laborers did not return to Bihar in large numbers during the second wave, many families did return during the Holi festival, which took place from March 26 to March 30, 2021. Although the Holi festival itself may not have contributed significantly to the spread of the virus, the arrival of a large number of people during this time could have led to its spread. Several factors potentially contributed to the spread of the virus during the second wave in Patna. Firstly, markets and offices remained open, allowing for continued interaction and potential transmission. Secondly, there were no restrictions on people's movements, allowing the virus to circulate more freely. While there was an increased use of masks during the second wave, many people still did not use masks consistently. All these factors likely played a role in the spread of the virus in Patna, as evidenced by the high number of positive cases in April 2021. To curb the spread of COVID-19 cases, a lockdown was imposed in the state of Bihar from May 5, 2021, until June 8, 2021. This lockdown proved beneficial in controlling the spread of the virus, as indicated by the decrease in daily new cases in the Patna district, which dropped from 8,365 on May 6, 2021, to 196 on May 31, 2021 **(The Hindu Patna Edition., 2021)**.

## 3. COVID-19 DEATH IN PATNA (A REPORT OF FIRST WAVE)

Based on the information provided, as of June 9, 2021, there were 9,429 reported covid deaths in the state. However, it is believed that the actual number of deaths might be higher as the reported figures include deaths from government hospitals, private hospitals, and deaths that occurred at home. The Health Department has requested a detailed report on deaths from all sources to obtain a more accurate count. In Patna district alone, there were 2,303 reported deaths **(Saha, K.C., 2021)**. It is important to note that this number may also be an underestimate due to the same reasons mentioned earlier. Of the total deaths, approximately 70 percent occurred in individuals aged 60 years and above during both the first and second waves of the pandemic. The deaths in Patna district were not limited to specific demographics, as doctors, members of the Legislative Assembly, officers, journalists, professors, police personnel, and others were among the victims. Specifically, 120 doctors lost their lives due to Covid-19. Among them, 42 deaths occurred during the first wave last year, and 78 deaths occurred during the second wave this year **(Surya, s., 2020)**.

## 4. PUBLIC HEALTH STRATEGIES BY BIHAR GOVERNMENT

In response to the highly contagious nature of the disease, the Bihar government declared a state-wide lockdown starting from March 22, which was scheduled to end on March 31. Subsequently, a nationwide lockdown was implemented by the central government from March 25 to April 14, with an extension until May 3. Throughout this period, strict limitations were imposed on people's movement, and most establishments were closed, excluding those involved in providing essential goods and services. It was anticipated that restrictions would be eased in districts with lower levels of infection after April 20. The research paper discusses the key measures were taken to prevent the spread of COVID-19 in Bihar state.

### 4.1. The Idea of Quarantine

Towards the end of March, as migrant workers began to come back to Bihar, the state government enforced a compulsory 14-day quarantine period at government relief camps. Later, in late May, the state government implemented a three-tier system for quarantine. In a matter of days, the government altered its approach and implemented a new strategy regarding the quarantine of returning migrants. Only those categorized as A (Block level) were required to undergo institutional quarantine, while asymptomatic individuals were allowed to undergo home quarantine. The closure of camps was completed by June 15, and the last registration for institutional quarantine occurred on June 1. The rationale behind this decision was that the government believed that migrants who arrived in Bihar after June 1 were not necessary returnee migrants. Additionally, since the camps were predominantly located in schools, they needed to be vacated in preparation for the government's plan to reopen schools in July. At the time of closure on June 14, there were 288 Block Quarantine Camps, accommodating a total of 1,533,392 individuals registered for quarantine. During their operation, these camps provided three daily meals to the residents and offered a minimum financial aid of ₹1,000. The state government also took measures to address population growth concerns by distributing kits containing condoms, contraceptives, and pregnancy tests to the discharged migrants. By June 10, approximately 1.7 million condoms had been distributed to the migrants **(Ibid, 2020)**.

### 4.2. Plans for Restricting the Spread of COVID Patients and Their Care

During the Covid pandemic, the State Government implemented a comprehensive strategy to control the spread of the virus and mitigate its impact. One of the key measures taken by the government was the implementation of tracing, tracking, and testing of individuals exhibiting Covid symptoms. This helped in identifying and isolating potential cases, thereby preventing further transmission. Additionally, Containment Zones were established in areas where a significant number of Covid cases were detected. In rural areas, houses with Covid patients were marked with posters, and micro containment zones were set up to contain the spread of the virus. To ensure public safety, the government made the use of masks mandatory in public places.

This measure aimed to reduce the risk of transmission through respiratory droplets. Strict enforcement of lockdown measures during both the first and second waves of the pandemic helped in limiting the movement of people and reducing the spread of the virus. In Patna town, sanitary measures were intensified to maintain cleanliness and hygiene. In villages with a high number of cases, mass testing was conducted to identify infected individuals. Additionally, the government undertook sanitation measures to disinfect the affected villages and prevent further transmission. To monitor the health status of patients in home isolation, a system was established. This allowed authorities to keep track of their condition and provide necessary support and medical assistance. Moreover, medicine kits were made available to ensure that essential medications were accessible to those in need. To facilitate testing, the government set up 66 testing centers in government facilities. Additionally, six mobile testing teams were deployed to reach remote areas. Testing services were also made available in 20 private hospitals and laboratories, expanding the testing capacity and ensuring wider coverage. Overall, the State Government took a multi-faceted approach, combining testing, containment measures, enforcement of lockdowns, and provision of healthcare support to effectively combat the spread of Covid-19 and safeguard public health. In addition, following decisions were taken to strengthen the health system: "Direction was issued to revive 1556 additional PHCs which had closed. A decision was made to hire 2,580 doctors on a contractual basis. It was determined that the assistance of final year students pursuing MBBS and BSc Nursing would be enlisted for Covid care. It was resolved to utilize the expertise of 15,000 trained Rural Health Workers for Covid care. Consideration should be given to the implementation of State Government decisions at various levels. In Patna town, over 50 percent of tests conducted were RTPCR tests, while in different blocks, more than 70 percent of tests were Antigen tests. Many Medical Officers in Charge (MOI/Cs) mentioned that while RTPCR tests are more reliable, Antigen tests allowed for quick screening of Covid patients.

They also noted that individuals who were tested were satisfied with the readily available results. The MOI/Cs suggested a strategy where individuals with symptoms should be initially tested using the Antigen test, and if symptoms persist, they can be subjected to RTPCR testing. The trained Auxiliary Nurse Midwives (ANMs) had become proficient in collecting samples. Samples collected for RTPCR testing were stored in the cold chain at the Primary Health Center (PHC) and sent to designated laboratories the following day after entering the necessary data in the portal. Initially, there was a significant delay in testing at these laboratories, with test results taking 6 to 7 days to become available. This delay was attributed to the closure of some government testing facilities for sanitization purposes. However, as of May 1, 2021, test results were obtainable within 48 hours. The Bio Medical waste (BMW) generated from Antigen testing was brought to the PHC and either incinerated or buried in a pit. The Isolation Centers equipped with oxygen facilities have been instrumental in assisting numerous patients during the COVID-19 pandemic. These centers also provided the benefit of receiving medical advice from the attending doctors. From April 15, 2021, to May 1, 2021, locating a hospital bed in Patna, as in many other cities across the country, was an extremely challenging task during the peak period of the virus. Moreover, there was a severe shortage of oxygen during this period. However, the situation gradually improved after May 1, 2021. Reports indicate that in rural areas, many individuals sought assistance from Rural Health Practitioners (RHPs). Some RHPs managed to care for 500-600 patients in a week, with the majority of them successfully recovering. In cases where patients experienced complications, the RHPs referred them to hospitals. It has been observed that around 15 percent of frontline workers and some doctors contracted the virus despite receiving both doses of the vaccine. However, they recovered within approximately 6-7 days and promptly resumed their duties after testing negative, prioritizing public interest despite feeling weakened. There is a common perception that vaccinated individuals are immune to all infections and may neglect necessary precautions **(Ibid, 2020)**.

### 4.3. Prevention for Mass Gathering

From March 13 to March 18, the state government implemented directives to close down several establishments until March 31. These included Anganwadi centers, schools, colleges, and various

commercial venues like movie theaters, parks, and malls. Government employees were instructed to report to the office on alternate days. Any gathering exceeding 50 individuals at a single location, except for weddings, was strictly forbidden. The transportation department was tasked with limiting both public and private transportation.

### 4.4. Welfare Steps

On March 16, the Chief Minister made an announcement stating that the expenses incurred for treating COVID-19 will be covered for Bihar residents through the Chief Minister Medical Assistance Fund. Additionally, the state government will extend financial assistance of four lakh rupees to the families of individuals who have lost their lives to COVID-19. Furthermore, the government has issued instructions to replace the provision of food under the Mid-Day Meal scheme in schools and Anganwadi centers with direct cash transfers.

### 4.5. Vaccination

Vaccination rollout began in February 2021 in the State, starting with frontline workers as a priority. The first phase targeted senior citizens aged 60 and above, followed by those aged 45 and above. Subsequently, the vaccination campaign included individuals in the 18-45 age group. By March 21, 2021, a total of 1,869,906 people had received the vaccine, and this number increased to 9,985,609 by May 24, 2021. Both urban and rural areas have shown great enthusiasm for vaccination, with Ward Commissioners and Mukhiyas actively involved in organizing vaccination camps. However, there have been instances of misinformation spreading in certain areas, suggesting that vaccination could result in death or complications. Additionally, there are reports of improper disposal of biomedical waste associated with vaccination in some blocks.

## 5. CONCLUSION

The State Government of Bihar effectively managed a significant Covid-19 outbreak by implementing prompt measures. Although there was a shortage of hospital beds and resources during the sudden surge in cases from April 15, 2021, to May 1, 2021, the situation improved due to the actions taken by the government. Moreover, the spread of the virus in rural areas was successfully controlled. It is important to acknowledge the collaborative efforts of frontline workers, the entire healthcare system, various administrative departments, and elected representatives who worked tirelessly as a unified team around the clock throughout the entire duration. As a result, the State successfully contained such a major pandemic outbreak. This outbreak also revealed the health system of the state. COVD-19 was a mirror for the government to establish a proper strong health system and now this is the time to shift the priorities first towards to provide good medical facilities for the people. The COVID outbreak was an eye opening in terms of damage and poor health system in the region.

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