

Study on The Impact of COVID 19 on Hospital Visits of Non-COVID Patients

By

Sonakshi Singh

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2018-2020



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To Whomsoever It May Concern

This is to certify that **Sonakshi Singh** has completed her internship/dissertation in Medical Operations department and has successfully completed her project on **To study the impact of COVID19 on hospital visits of Non-COVID patients from 3rd February 2020 to 30th May 2020**

During her internship we found her punctual and hardworking. Sonakshi is enthusiastic, has creative ideas, and has tremendous potential to adapt in a dynamic corporate environment.

She has a pleasing personality, and is an excellent team player

We are confident that Sonakshi will develop her potential and graduate to be a high performance individual

We wish her all the best in future endeavours.

For Credihealth Pvt Ltd.


Authorized Signatory

Best Regards,

Ravi Virmani | Founder & Managing Director



THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled “A study on the impact of COVID 19 on hospital visits of non-COVID patients” and submitted by Sonakshi Singh, Enrollment No.0841 under the supervision of Dr. Dr. Sameer Phadnis for award of MBA in Health and Hospital Administration of the University carried out during the period from February 3,2020 to May 4,2020 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Signature

Acknowledgement

The ultimate result of this project required a great deal of direction and help from numerous individuals and I am incredibly favoured to have this up and down the fulfilment of my undertaking. All that I have done is just because of such supervision and help.

I would like to extend my heartfelt gratitude to the Ravi Virmani Sir, Founder and MD at Credihealth, Gurgaon for providing us with the opportunity to undergo our Summer Training in the esteemed organization.

I regard and express gratitude toward Dr Himanshi Chhabra, Vice President- Operations and Growth at Credihealth, Gurgaon for giving me a chance to do the project work in Department of Quality Management and giving me the backing and direction, which made me complete the undertaking properly. I am incredibly appreciative to Dr Ashwanth Prathapani, AVP – Medical Operations at B.L.K Super Speciality Hospital, New Delhi for giving such a pleasant help and direction in the project work.

I owe my profound gratitude to my Guide Dr. Sameer Phadnis, The IIHMR University who supervised the entire project work and guided me all along, till the culmination of my undertaking work by giving all the vital instructions to build up the reports.

I would also like to extend my warm regards towards Mr. Navneet Nanda, Product at Credihealth, Gurgaon and my fellow colleague, Mr. Shakti Singh at Credihealth, Gurgaon for providing a helping hand for collection of data.

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Abbreviations

OPD – Outpatient Department

IPD – Inpatient Department

CABG – Coronary Artery Bypass Grafting

COVID – Coronavirus

Obs & Gynae – Obstetrics and Gynaecology

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A STUDY ON THE IMPACT OF COVID 19 ON HOSPITAL VISITS OF NON-COVID PATIENTS

Abstract

As the Indian healthcare system attempts to break the tide of the novel coronavirus pandemic through lockdown, the highest cost for this fight is borne by the non-COVID-19 patients. During this period of global pandemic, OPD and non-emergency services have been stopped in several hospitals so that all resources are diverted for combatting COVID-19 and emergency medical care.

Before the COVID 19 pandemic, thousands of patients from less developed states used to visit tertiary care hospitals in metropolitan cities to seek healthcare. But due to the COVID 19 outbreak and the lockdown, their fate hangs by a fine thread now. Patients suffering from non-COVID-19 diseases, patients with scheduled surgical procedures and follow-up visits are undergoing an unimaginable crisis – the impact of which is compounded for patients needing hospitalized care.

The purpose of this report is to showcase the impact of COVID 19 on OPD and IPD procedures. This study also focuses on how non COVID patients are affected by the pandemic. We also see the pattern in conversion rate and cancellation rate in various specialties and elective procedures.

Conversion rate

The key challenge for e-Healthcare market is not to get the traffic reaching its site but it's retention, engagement and lifetime value. One of the crucial monitors of any service provider is the customer acquisition which can be calculated by the conversion rates. The conversion rate indicates that the provider took some action that pushes the consumer a bit further down the acquisition funnel.

Introduction

Hospitals play a critical role within the health system in providing essential medical care to the community, particularly in a crisis. Prolonged and combined outbreaks can lead to the progressive spread of disease with rapidly increasing service demands that can potentially overwhelm the capacity of hospitals and the health system at large.

During the current outbreak of COVID-19, an interruption of these critical support services and supplies would potentially disrupt the provision of acute health care by an unprepared health-care facility. In addition, a high rate of staff absenteeism can be expected. A shortage of critical equipment and supplies could limit access to needed care and have a direct impact on healthcare

delivery. Panic could potentially jeopardize established working routines. Even for a well-prepared hospital, coping with the health consequences of a COVID-19 outbreak would be a challenge. Covid-19 is an ongoing situation and organization's processes should be changed daily to adapt to various needs in this crisis. Along with this, organizations need to navigate through implementation of different strategies to reduce impact.

Literature review

1. In a review article on “COVID-19, an Emerging Coronavirus Infection: Current Scenario and Recent Developments – An Overview”, by Alfonso J. Rodriguez-Morales, D. Katterine Bonilla-Aldana, Ruchi Tiwari, Ranjit Sah, Ali A. Rabaan and Kuldeep Dhama, it was concluded that worldwide scientists, researchers, and various health agencies are in a race to fight COVID-19 by designing appropriate vaccines and therapeutics to keep away any pandemic situation which may arise otherwise if this virus could not be halted and are putting high efforts to stop the further transmission and spread of SARS-CoV-2 by following strict vigilance, intervention strategies, heightened prevention and control policies.
2. A study on “The Global Macroeconomic Impacts of COVID-19: Seven Scenarios” by Warwick McKibbin and Roshen Fernando presented a range of policy responses which will be required both in the short term as well as in the coming years for COVID-19 outbreak under seven different scenarios. Quarantining affected people and reducing large scale social interaction is an effective response. Along with this, wide dissemination of good hygiene practices can be a low cost and highly effective response that can reduce the extent of contagion and therefore reduce the social and economic cost. The longer-term responses are even more important. Global cooperation, especially in the sphere of public health and economic development, is essential. All major countries need to participate actively. It would be too late to act once the disease has taken hold in many other countries and attempt to close borders once a pandemic has started.
3. A study on “Forecasting COVID-19 impact on hospital bed-days, ICU-days, ventilator days and deaths by US state in the next 4 months” done by Christopher J.L. Murray, discussed that in addition to a large number of deaths from COVID-19, the epidemic in the US is expected to place a load well beyond the current capacity of hospitals to manage, especially for ICU care. These estimates can help inform the development and implementation of strategies to mitigate this gap, including reducing non-COVID-19 demand for services and temporarily increasing system capacity. It further concluded that the estimated excess demand on hospital systems is predicated on the enactment of social distancing measures in all states that have not done so already within the next week and maintenance of these measures throughout the epidemic, emphasizing the importance of implementing, enforcing, and maintaining these measures to mitigate hospital system overload and prevent deaths.
4. In the article titled "Hospital Capacity and Operations in the Coronavirus disease 2019 (COVID19) Pandemic - Planning for the Nth patient" it was discussed that, since the hospital systems are designed for average patient loads, not epidemics and also, observations from Italy demonstrate what is at stake and when containment fails, the

exponential growth of cases can transform a public health emergency into an operational crisis. However, in manufacturing or customer service, queues may result in decreased profitability and in critical care medicine, queues can be deadly. Many hospitals have mass casualty protocols for catastrophic events and the COVID-19 response could require an equal mobilization of staff and resources but during a sustained period. As a solution, nearby hospital systems should communicate early and often, given that efficient case sharing and transport between hospitals could become essential. This planning and response will require a multidisciplinary effort; physicians, nurses, respiratory therapists, pharmacists, environmental services staff, supply chain managers, and many others possess needed expertise. Messaging from hospital leadership must be communicated often and clearly and the protection of staff from infection must remain a high priority.

5. In a review article on "What US Hospitals should do now to prepare for a COVID-19 pandemic ", by Eric Toner, MD, and Richard Waldhorn, MD, it was concluded that the impact of a COVID-19 pandemic on hospitals is expected to be severe in the best of circumstances. Currently, US hospitals routinely operate at or near full capacity and have limited ability to rapidly increase services. There are currently shortages of healthcare workers of all kinds. Also, Emergency departments are overcrowded and often have to divert patients to other hospitals. Moreover, the provision of medical services to both COVID-19 and non-COVID-19 patients is adversely affected in most communities. Therefore, several of the priority items (comprehensive and collaborative planning, discussing allocation of scarce resources, and planning education and training) take substantial time and hospitals should begin these actions now in order to make the discussion of hospital pandemic preparedness issues more operationally useful.

Aim- A study on the impact of COVID 19 on hospital visits of non-COVID patients.

Research questions

1. What is the OPD conversion rate pre and post Coronavirus outbreak city-wise?
2. What is the IPD conversion rate pre and post Coronavirus outbreak city-wise?
3. What is the cancellation rate in OPD and IPD due to coronavirus outbreak city-wise?
4. What is the impact of COVID 19 outbreak on the incoming OPD and IPD requests in different specialties and procedures in Delhi NCR.

Objectives

1. To compare the OPD conversion rate pre and post Coronavirus outbreak city-wise.
2. To compare the IPD conversion rate pre and post Coronavirus outbreak city-wise.
3. To measure the cancellations in OPD and IPD due to coronavirus outbreak city-wise
4. To study and compare the number of incoming OPD and IPD requests in different specialties and procedures before and after COVID 19 outbreak in Delhi NCR.

Methodology: The study was carried out in Credihealth Pvt Ltd, Gurgaon. It was an observational study. The various conversion rate parameters in OPD and IPD in hospitals were noted down and analyzed.

Study site - Credihealth

Study Period – 3 months (February 3, 2020 to May 4, 2020)

Study population – Patients visiting Credihealth through different platforms (website, online App, through telephone)

- Inclusion criteria – Non-COVID patients
- Exclusion criteria – COVID patients

Study design – Study based on analysis of secondary data

Study Area – Major cities of India – Delhi-NCR, Mumbai, Kolkata, Bangalore, Hyderabad, and Chennai

Sample method – Non-probability convenient sampling

Research tool/instrument used – Checklist. A data use cases sheet along with the parameters to be measured was prepared separately for OPD specialties and IPD procedures.

The parameters studied for OPD specialties are

PARAMETERS	BEFORE 22 MARCH 2020 (before COVID 19 Outbreak)	CONVERSION RATE or CANCELLATION RATE (%)	BETWEEN 22 MARCH - 27 APRIL 2020 (during COVID 19 Outbreak)	CONVERSION RATE or CANCELLATION RATE(%)
Total no. of OPD requests in				
Total no. of converted OPD requests in				
Total no. of OPD cancellations due to COVID 19 in				

The parameters studied for the IPD procedures are

PARAMETERS	BEFORE 22 MARCH 2020 (before COVID 19 Outbreak)	CONVERSION RATE or CANCELLATION RATE (%)	BETWEEN 22 MARCH - 27 APRIL 2020 (during COVID 19 Outbreak)	CONVERSION RATE or CANCELLATION RATE(%)
Total no. of converted IPD cases				
Total no. of IPD cancellations due coronavirus outbreak				
Total no. of planned surgeries				

Data Analysis– Data analysis done through MS Excel.

Conversion rate: The conversion rate is the number of conversions divided by the total number of visitors. For example, if an ecommerce site receives 200 visitors in a month and has 50 sales, the conversion rate would be 50 divided by 200, or 25%.

- *OPD conversion rate = (Number of OPD requests converted/Total number of incoming OPD requests) ×*

100

- *IPD conversion rate =*
$$\frac{(\text{Number of IPD requests converted})}{(\text{Total number of incoming IPD requests})} \times 100$$

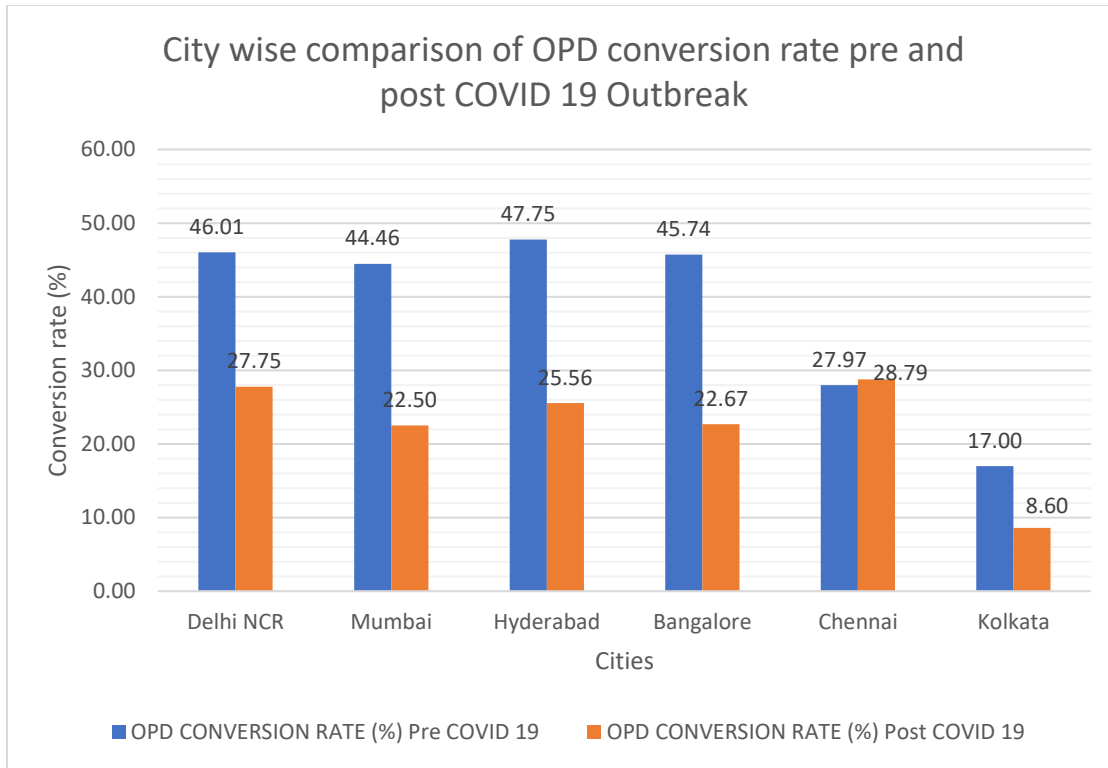
Cancellation rate: It is the percentage of appointments for which patients did not show. That means, Total number of no-show appointments divided by the total number of appointment slots. Multiply the result by 100.

- *OPD cancellation rate =*
$$\frac{(\text{Number of OPD requests cancelled})}{(\text{Total number of incoming OPD requests})} \times 100$$
- *IPD cancellation rate =*
$$\frac{(\text{Number of IPD requests cancelled})}{(\text{Total number of incoming IPD requests})} \times 100$$

Analysis

The total data collected was collected from March 1, 2020 to April 30, 2020. A data use cases sheet was prepared. Collected data was then entered in excel and analyzed using frequencies, percentage proportion and graphs.

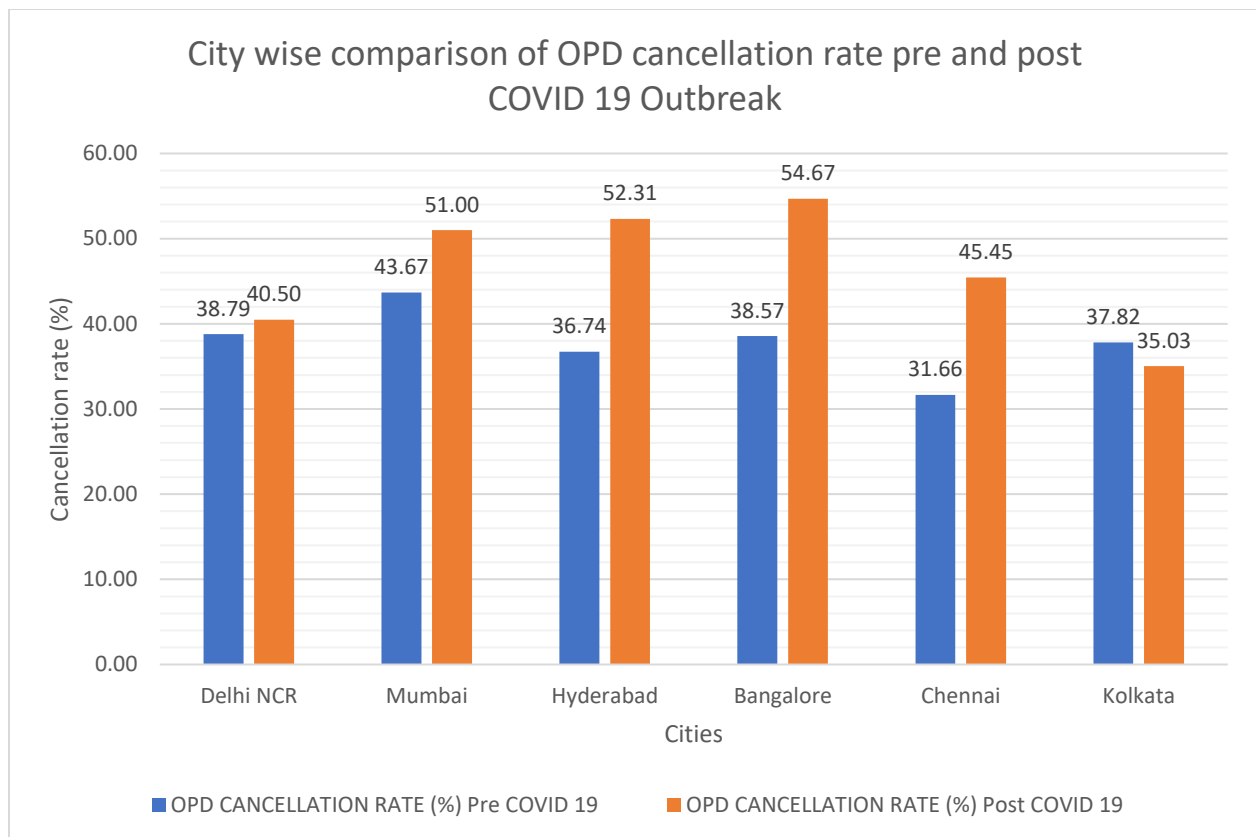
Result



Graph 1: City wise comparison of OPD conversion rate pre and post COVID 19 Outbreak

Interpretation: The above graph can be interpreted as:

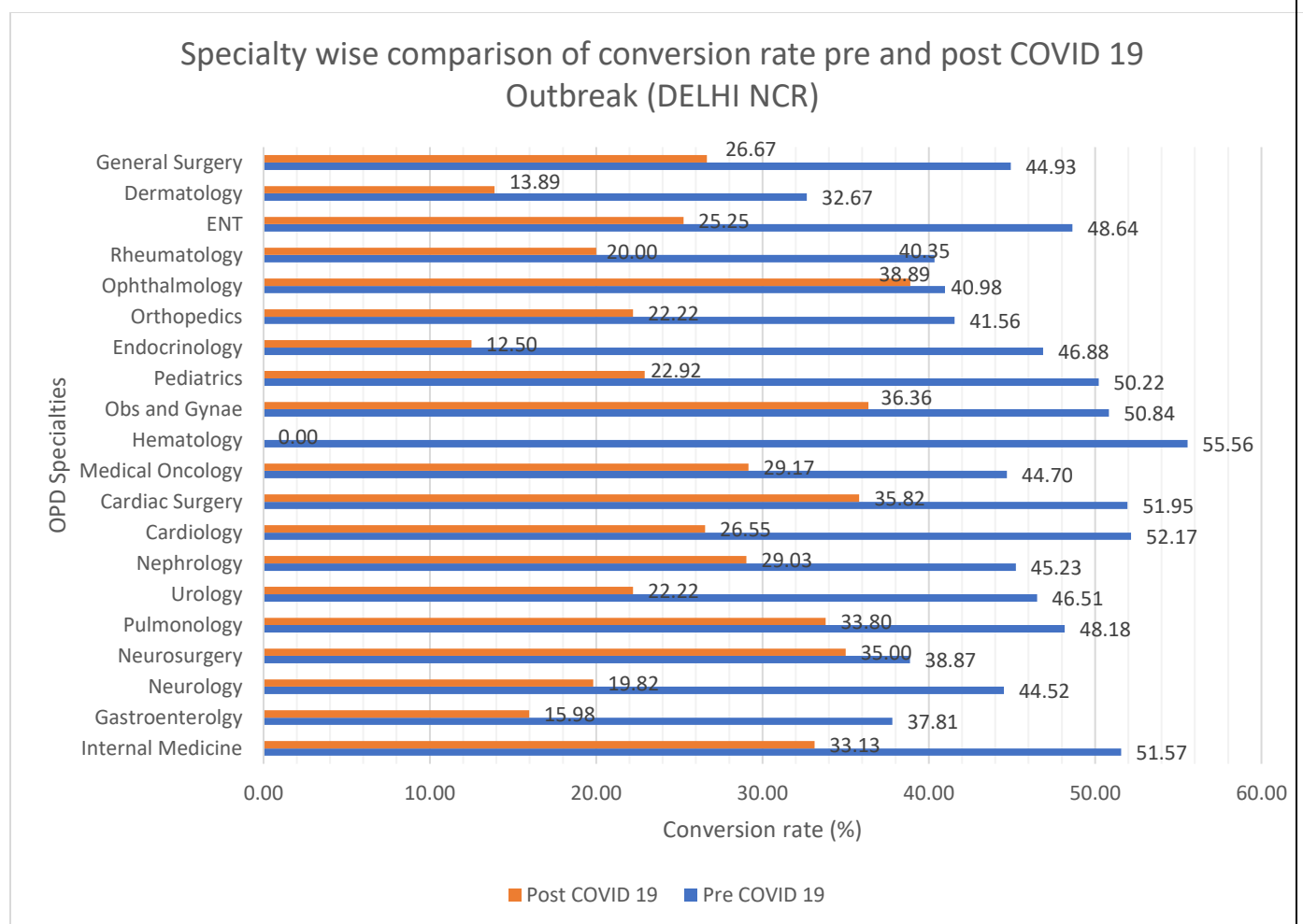
- Cities like Delhi NCR, Mumbai, Hyderabad and Bangalore has higher OPD conversion rate before COVID 19 outbreak as compared to Chennai and Kolkata.
- The OPD conversion rate impacted by COVID 19 Outbreak was of Bangalore which decreased to 22.67% (51) from 45.74% (510) followed by Hyderabad which is decreased to 25.56% (216) from 47.75% (1154) and Mumbai which decreased to 22.5% (90) from 44.46% (1015). This shows the higher awareness and higher number of COVID cases which led to decreased conversion rates of these cities.



Graph 2: City wise comparison of OPD cancellation rate pre and post COVID 19 Outbreak

Interpretation: The graph can be interpreted as:

- Before COVID 19 Outbreak, Chennai has the minimum cancellation rate among the other major cities which is 31.66% (120) followed by Hyderabad which is 36.74% (888). Whereas Mumbai shows the highest cancellation rate which is 43.67% (997) followed by Delhi NCR which is 38.79% (2906).
- After COVID 19 Outbreak, Bangalore shows the highest cancellation rate which increased to 54.67% (123) from 38.57% (430) followed by Hyderabad which increased to 52.31% (442) from 36.74% (888). On the other side, Kolkata shows the lowest cancellation rate which is 35.03% (110) followed by Delhi NCR which is 40.5% (648).

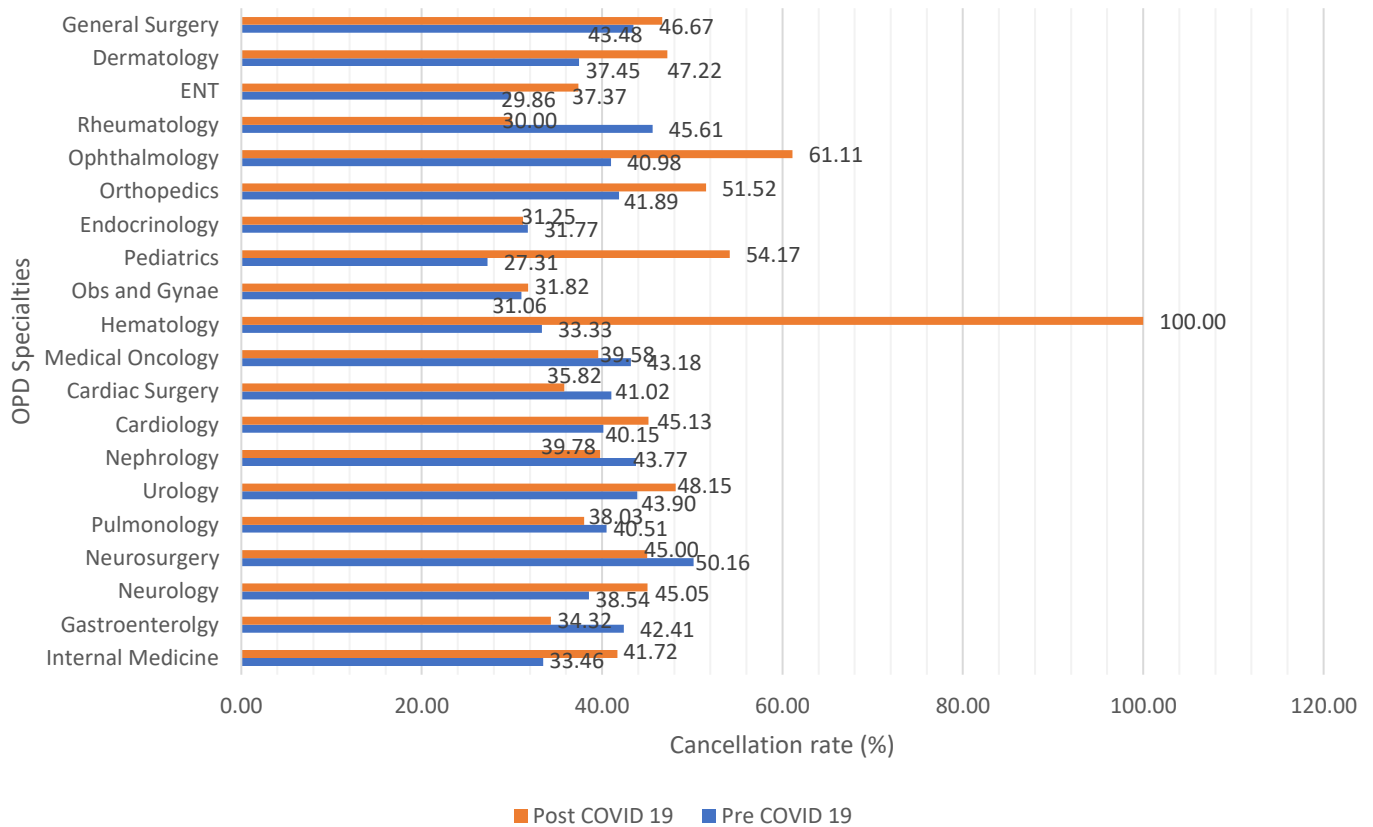


Graph 3: Specialty wise comparison of conversion rate pre and post COVID 19 Outbreak (%) (DELHI NCR)

Interpretation: it is evident from the above graph that

- post COVID 19 outbreak, there is overall decline in conversion rate in every specialty.
- Specialties like Internal medicines (33% i.e, 54), Pulmonology (33.80% i.e 24), Obs and Gynae (36.36% i.e 104) and Cardiac surgery (35.82% i.e 24) shows relatively higher conversion rate post COVID 19 among the other specialties.
- There is drastic decline in post COVID 19 conversion rate in hematology. After COVID 19 outbreak, hematology shows sharp decline from 55.56% (5) to 0% (0) conversion rate. This indicates that due to increasing risk of COVID 19, rather than going to the hospitals for the blood tests, patients either postponed their tests or opted for home based healthcare services for such specialty.

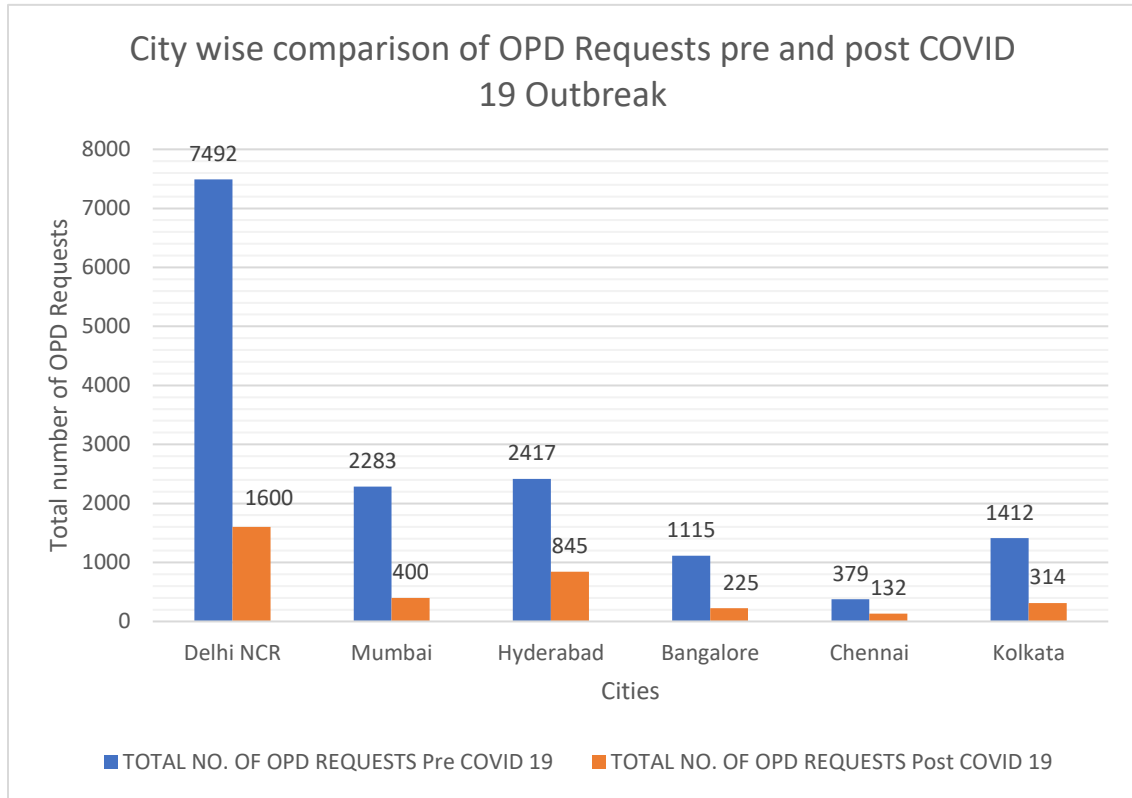
Specialty wise comparison of cancellation rate pre and post COVID 19 Outbreak (%) (DELHI NCR)



Graph 4: Specialty wise comparison of cancellation rate pre and post COVID 19 Outbreak (%) (DELHI NCR)

Interpretation: the above graph shows that

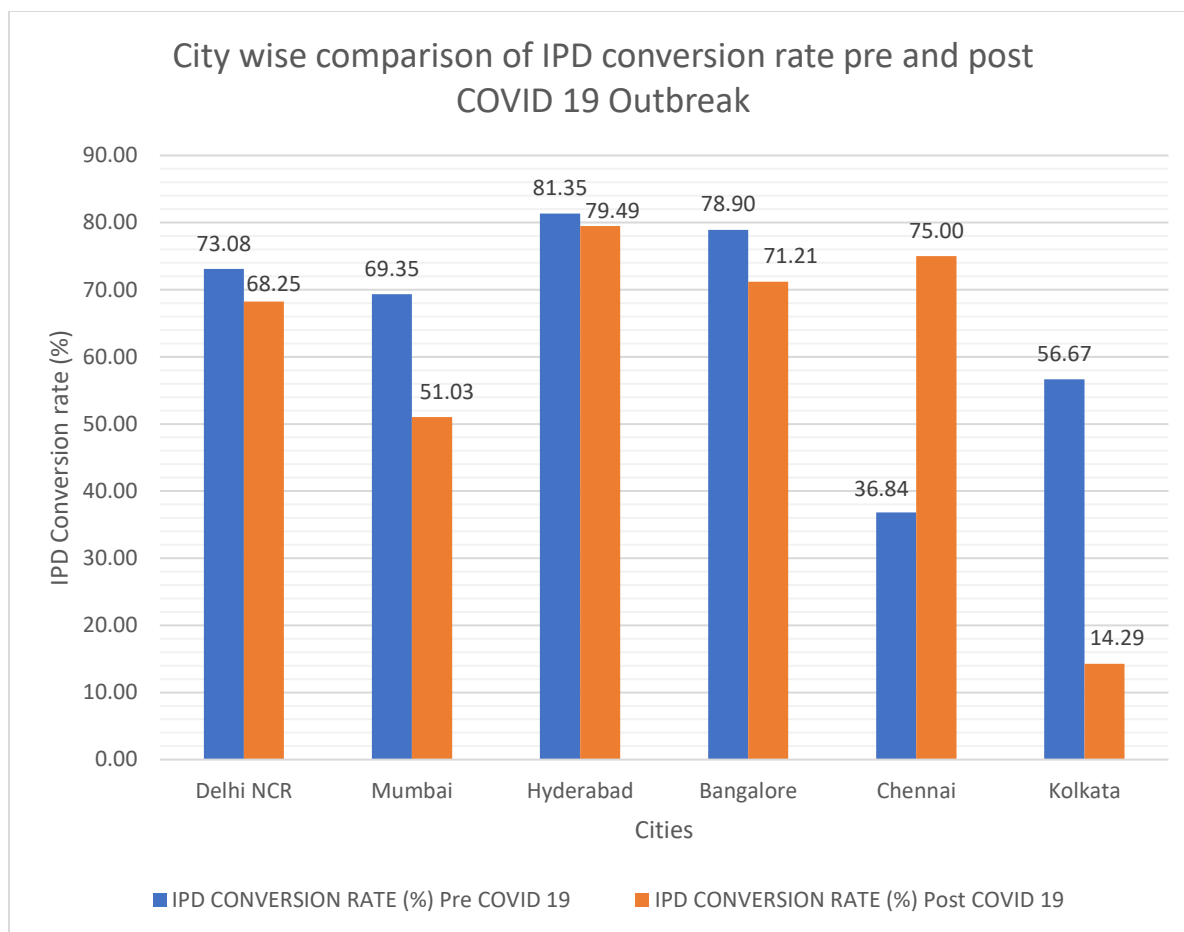
- there is overall increase in cancellation rate in every specialty post COVID 19 outbreak.
- In hematology, the cancellation rate rapidly increased from 33% (3) (pre COVID 19) to 100% (4) (post COVID 19) indicating that people stopped going for blood tests and blood related consultations. Instead they started opting for homecare services for blood tests.
- On the other side, specialties like Obs and Gynae (31.82% ie, 91), Rheumatology (30% ie 3) and Endocrinology (31% i.e 5) shows the low cancellation rate among the other specialties indicating that these specialties cannot be postponed.



Graph 5: City wise comparison of OPD Requests pre and post COVID 19 Outbreak

Interpretation: it can be interpreted that:

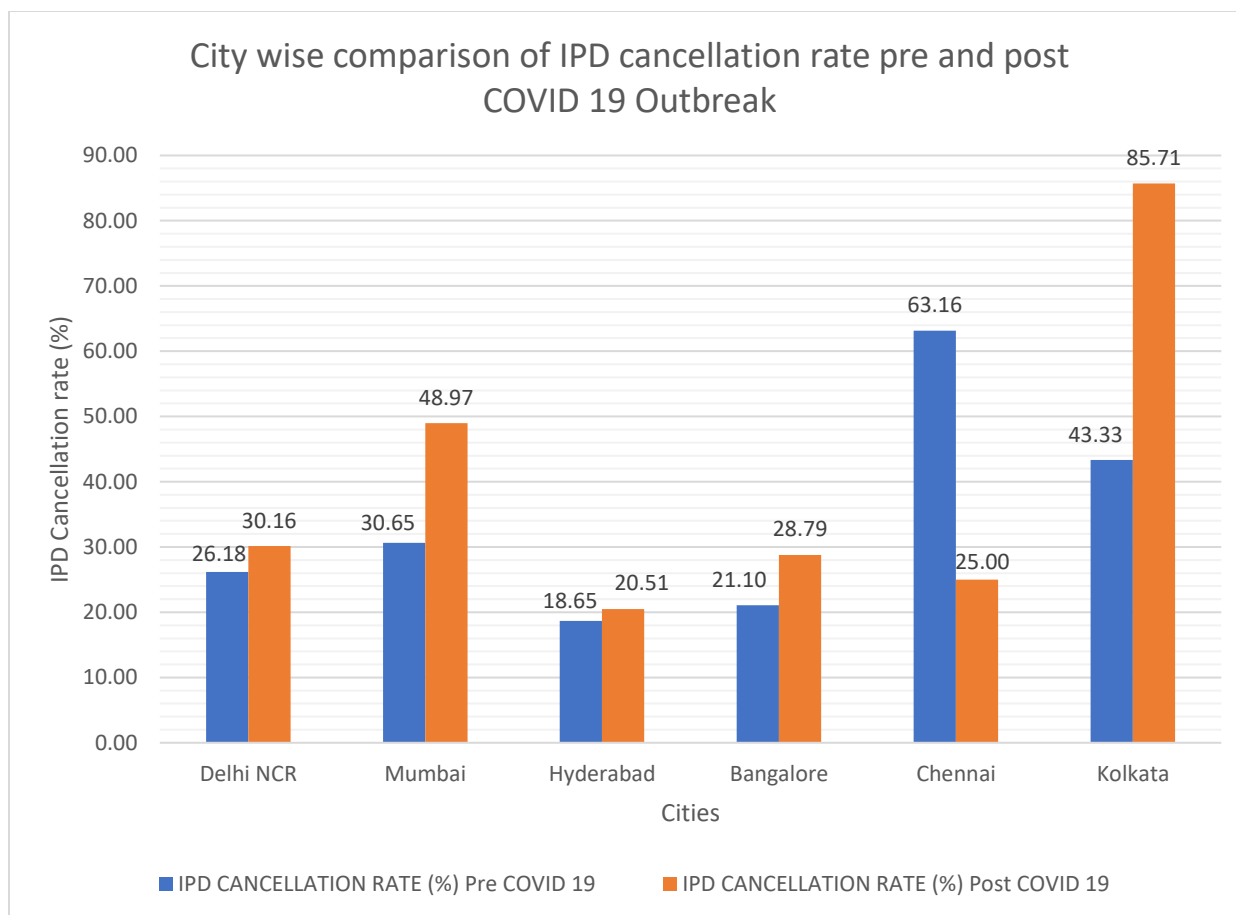
- COVID 19 Outbreak has impacted the number of OPD requests drastically. We see the highest difference in Delhi where the number of OPD requests have dropped from 7492 to 1600. We can see the similar impact on other cities as well.



Graph 6: City wise comparison of IPD conversion rate pre and post COVID 19 Outbreak

Interpretation: it can be interpreted from the above graph that:

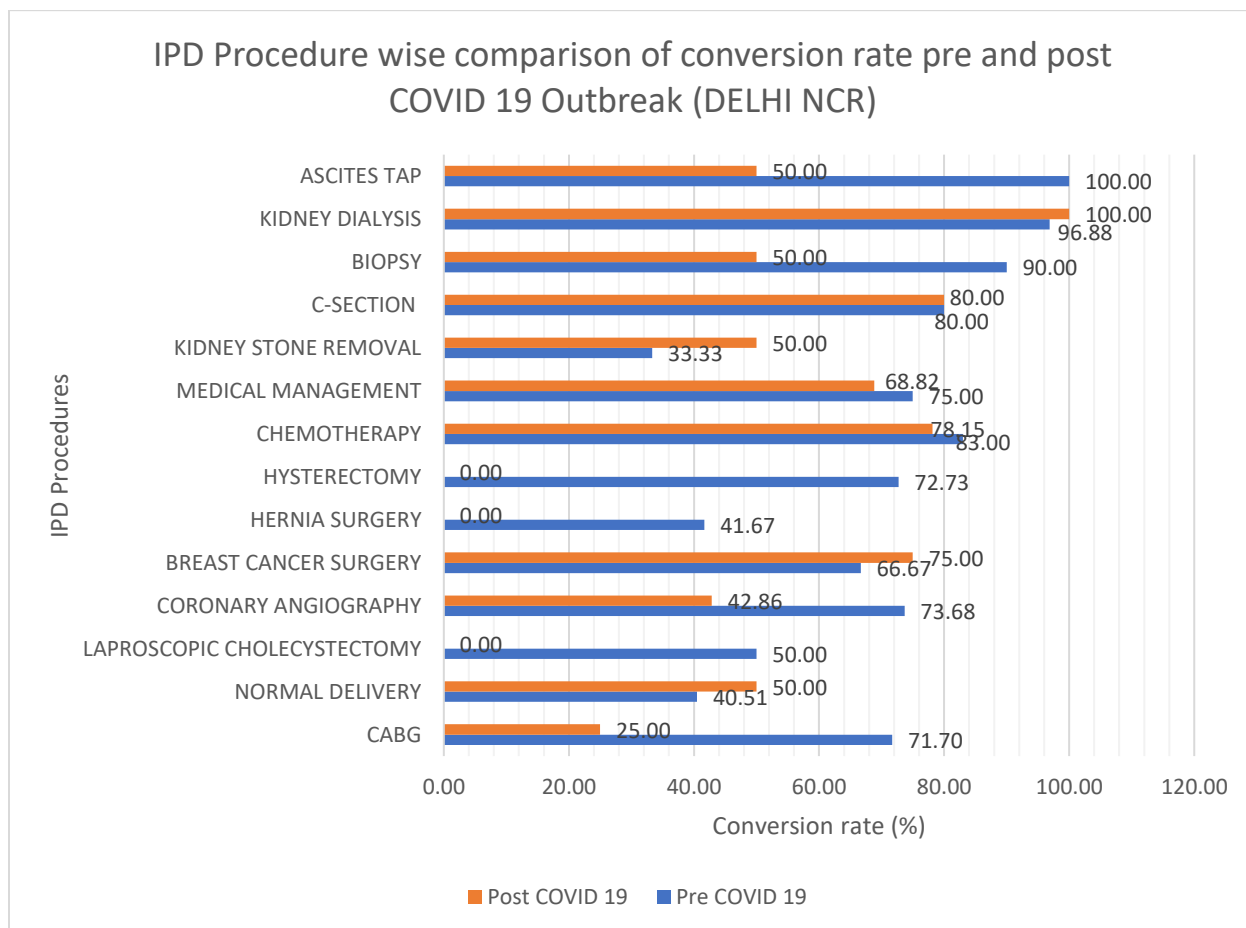
- Before COVID 19 outbreak, Hyderabad has the highest IPD conversion rate which is 81.35% (266) among the other cities followed by Bangalore which is 78.9% (86).
- After COVID 19 outbreak, the number of IPD conversion rate in all the cities declined except Chennai. Furthermore, Kolkata shows the greatest decline in IPD conversion rate which is from 56.67% (17) to 14.29% (1) followed by Mumbai the IPD conversion rate of which declined from 69.35% (181) to 51.03% (74) due to increasing COVID 19 cases.



Graph 7: City wise comparison of IPD cancellation rate pre and post COVID 19 Outbreak

Interpretation: the above graph shows that

- There is overall increase in cancellation rates in all the cities post COVID 19 outbreak.
- Kolkata shows the highest cancellation rate which is 85% (6) post COVID outbreak followed by Mumbai which is 49% (71). As mentioned in the previous graph, due to high number of COVID 19 cases and being at higher risk, Mumbai shows high cancellation rate.

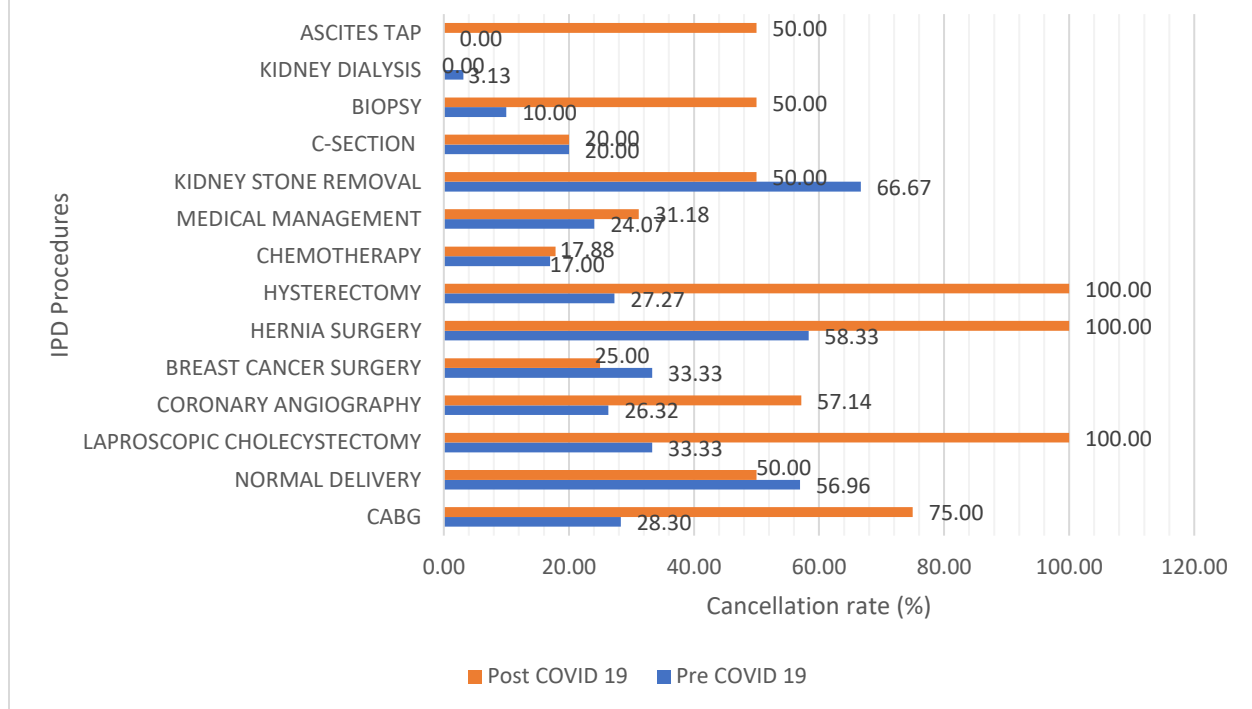


Graph 8: IPD Procedure wise comparison of conversion rate pre and post COVID 19 Outbreak (DELHI NCR)

Interpretation: it can be interpreted from the above graph that

- Post COVID 19, there is not much difference in conversion rate of essential IPD procedures. However, the conversion rate of elective IPD procedures declined after COVID 19 outbreak.
- Post COVID 19 outbreak, there is drastic decline in conversion rate of procedures like Hernia surgery, Hysterectomy and Laproscopic Cholecystectomy to 0.
- However, IPD Procedures like C-section (80%), Chemotherapy (83% in pre COVID to 78% in post COVID) and Kidney dialysis (96.88% in pre COVID to 100% in post COVID) remained almost same post COVID 19 outbreak also indicating them being essential IPD procedures.

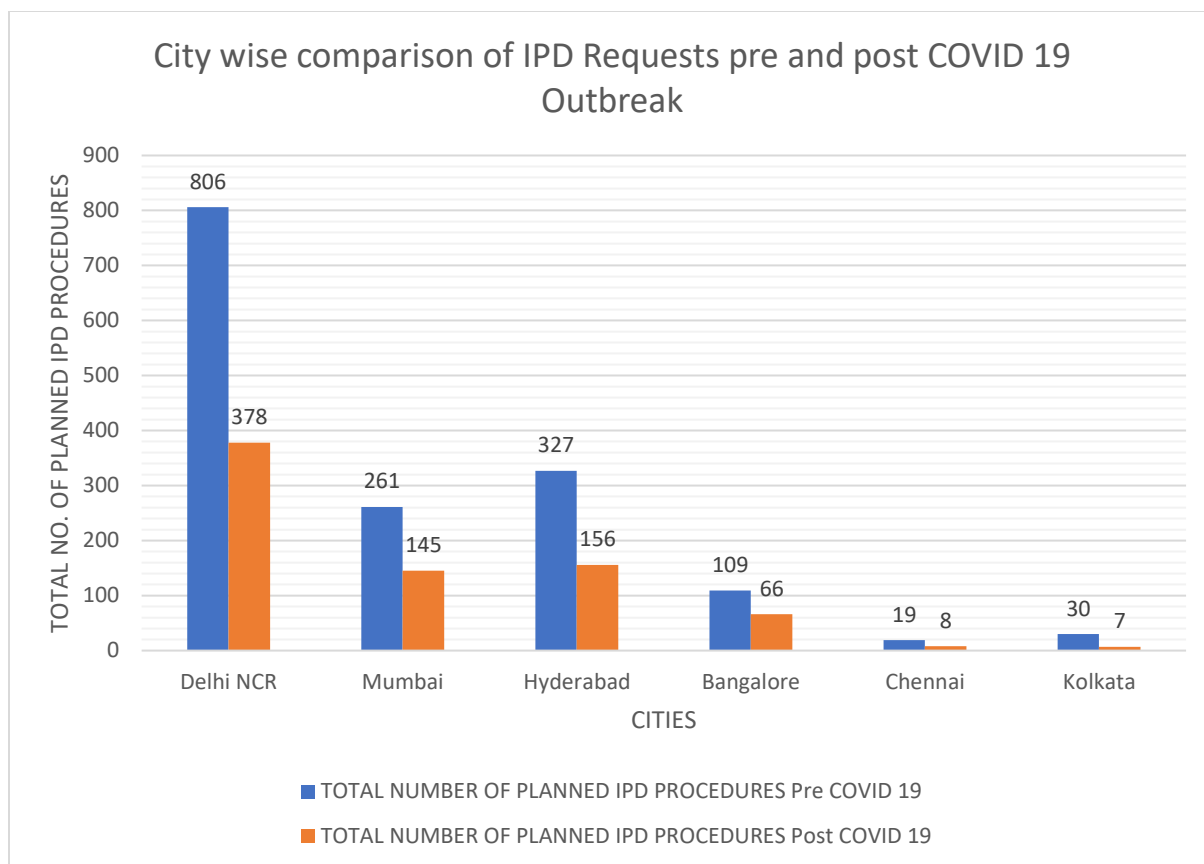
IPD Procedure wise comparison of cancellation rate pre and post COVID 19 Outbreak (DELHI NCR)



Graph 9: IPD Procedure wise comparison of cancellation rate pre and post COVID 19 Outbreak (DELHI NCR)

Interpretation: it is clearly evident from the above graph that

- The cancellation rates post COVID 19 outbreak increased drastically in every IPD procedure.
- IPD procedures like Hernia Surgery (100%), Hysterectomy (100%), and CABG (75%), being elective procedures shows highest cancellation rates among all the IPD procedures which is way more than what was before COVID 19 outbreak.
- However, Chemotherapy remained unaffected by COVID 19 outbreak. Its cancellation rate remained same as before COVID 19 outbreak (17%).



Graph 10: City wise comparison of IPD Requests pre and post COVID 19 Outbreak

Interpretation: the above graph shows the city wise comparison of IPD requests before and after COVID 19 outbreak. It can be interpreted as:

- Before COVID 19 outbreak, Delhi has the maximum number of IPD requests (806) followed by Hyderabad (327) and Mumbai (261).
- A drastic decline in the incoming IPD requests can be seen in all the cities. However, Delhi NCR shows the maximum decline in the incoming IPD requests from 806 (pre COVID 19 outbreak) to only 378 (post COVID 19 outbreak) followed by Hyderabad the IPD requests of which declined from 327 to 156.

Conclusion

From graph 1 and graph 6, which depicts city wise comparison of OPD and IPD conversion rate pre and post COVID 19 Outbreak, we can interpret that the conversion rates were higher in pre pandemic than post COVID 19 outbreak. It was because due to pandemic, hospitals shut down and only essential services were being provided.

From graph 2 and graph 7, which indicates the city wise comparison of OPD and IPD cancellation rate pre and post COVID 19 outbreak, we see greater cancellation rates since hospitals were providing essential services only. Patient had to cancel their prior appointments due to lockdown.

Graph 3 and graph 8 which shows OPD specialty and IPD Procedure wise comparison of conversion rate pre and post COVID 19 Outbreak in DELHI NCR. We see that essential procedures like chemotherapy could not be stopped as it is a matter of life and death. And also, important OPD specialties like Pulmonology, Internal medicine and Obs and Gynae shows comparatively higher conversion rates. Hence, the conversion rates remained similar for such kind of procedures and OPD. However, for elective procedures like Hernia surgery, the conversion rate dropped drastically as they can be postponed.

Similarly, the cancellation rates increased for elective surgeries but remained unchanged for essential procedures. This can be seen from graph 4 and graph 9 which shows OPD specialty and IPD Procedure wise comparison of cancellation rate pre and post COVID 19 Outbreak in DELHI NCR (respectively).

From graph 5 and graph 10 shows city wise comparison of OPD and IPD Requests pre and post COVID 19 Outbreak, we can say that the number of requests got limited to essential services only during the pandemic. Hence, we see a drop in both OPD and IPD requests.

From the analyzed graphs, we can conclude that due to COVID 19, the hospitals faced a major impact and services were delayed to the patients. The pandemic has hugely affected the healthcare sector.

Consequences of the findings-

- Healthcare utilization is affected. To combat the pandemic and decrease in appointments, hospitals adopted the telehealth methodology wherein the patients could contact their doctors on virtual platform. This removed the requirement of the physical presence of the patients at hospital.
- Given the scenario that the patient could not go physically to the hospital for their diagnostics, Credihealth started appointments for diagnostics and providing medicines delivered at home.
- With social distancing becoming one of the most important things during pandemic, Credihealth also started shifting towards making healthcare at home appointments for their clients.

References

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2. (J. McKibbin and Fernando, 2020)
3. (Forecasting COVID-19 impact on hospital bed-days, ICU-days, ventilator days and deaths by US state in the next 4 months, 2020)
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8. (Percentage of No-Show Appointments | IHI - Institute for Healthcare Improvement, 2020)