SUMMER TRAINING AT
APOLLO HOSPITALS, APOLLO HEALTH CITY
JUBILEE HILLS, HYDERABAD

From 10th May 2021 to 2nd July 2021

A Report

By

Dr. Shree Priya Dhanee

(1203)

MBA- HM 25 (2020-2022)

A Report on Resource Optimization by Apollo Stay-I & Apollo Kavach programme and assessment of financial reporting with operational workflow.

IIHMR UNIVERSITY

Apollo Health City
HYDERABAD

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Corporate Identity Number (CIN) : L85110TN1979PLC008035

02st Jul, 2021

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr.Shree Priya Dhanee** of IIHMR University Jaipur has completed her Project on "**A Study Apollo Kavach Resource Optimization through Hotel beds for COVID Isolation"** at Apollo hospitals, Hyderabad. She has done her Internship from 10th-May-2021 to 02nd-Jul-2021 in **Operations & Human Resources** department. During the period we found her performance to be good and regular in her duties.

We wish all the success in her future endeavors.

For **Apollo Hospitals Enterprise Limited**

APOLLO HOSPITALS Apollo Jubilee Hills, Hyd-96

E.POONAM REDDY
MANAGER
HUMAN RESOURCES

Organization Accredited by Joint Commission International

Acknowledgements

The two months that I spent at Apollo hospitals, Hyderabad are one of the crucial learnings of my life. They helped me to grow as a person and understand life with unique perspective. I am glad that I was given an opportunity to be a part of this environment which taught me something new each time. This project is the outcome of the experiences, learning and passion towards the subject and the confidence that my dear ones have shown in me.

I am extremely grateful to my mentor Col (Dr.) Mahender Kumar, Professor, Proctor, IIHMR University, for his timely and explicit guidance. He has been extremely kind and patient to support me with my project.

I would like to take this opportunity to offer my heartfelt gratitude and admiration towards the people who have helped me during this journey. I extend my profound gratitude to Mr. Suresh Reddy Chintala, Ms. Poonam Reddy and Mr. Naveen Kumar for providing me with the opportunity to work here and meet the wonderful professionals and colleagues who led me through this internship period.

I am ineffably indebted to my mentor Dr. Tarun Kondabolu (Deputy General Manager, Operations) who has been my driving force and the support system during this internship period. This project would never have been accomplished with such grace and on schedule without his exceptional mentoring, monitoring, and consistent encouragement.
I should carry and remember his blessings, assistance, and direction throughout the journey of life on which I am about to undertake.

I am indebted to Mr. Md. Tameem Ansari (Business Analyst) who has always been a guiding light whenever I have been shaded by darkness. Thank you for showing faith in me and making me realise my potential. Your words of wisdom and motivation has always acted as a stimulus for me and have driven me towards excellence.

Lastly, I would like to thank everyone who helped me directly or indirectly in making this project a success.

Contents

Acronyms/Abbreviations

1.	IVP	Intravenous Pyelogram
2.	RGU	Retrograde Urethrogram
3.	MCU	Micturating Cysto-Urethrogram
4.	COPD	Coronary Obstructive Pulmonary Disease
5.	SPOC	Single Point of Contact
6.	MARS	Mobile Application Rating Scale
7.	PPE	Personal Protective Equipment
8.	ICMR	Indian Council of Medical Research

Organisation Profile

Apollo Hospitals Enterprise Limited (AHEL) is among Asia's leading private healthcare providers. Dr. Pratap C Reddy's vision for a comprehensive 250-bed hospital in Chennai, with concentrated attention on specialization and super specialties in over 50 departments, commenced as a public limited company in 1979. In the year 1985, 46 beds were installed. It is the first group of hospitals in India to pioneer the delivery of corporate healthcare.

In 1988, the world was welcomed to Apollo Hyderabad. With a strong belief in the ideals of excellence, competence, empathy, and innovation, the hospital was built with the primary goal of providing world-class healthcare to the public. Apollo hospitals Hyderabad has grown to become Asia's most recognised and trusted integrated health city, specialising in everything from sickness to wellness and holistic therapy.

In terms of specialised skill, expectations, and accomplishments, Apollo Hospitals has set the bar high. Apollo Health City, Hyderabad, is a health city rather than a clinical city, as it spans the entire spectrum of illness to well-being. Foundations for Cancer, Heart Diseases, Joint Diseases, Eye and Cosmetic Surgery Renal Diseases, Neurosciences, Emergency, are largely focusing of greatness and are prepared to offer the best consideration in the most secure way to each persistent independent of anything. Aside from patient care, each of these centres of excellence devotes a significant amount of time and resources to planning and research aimed at preventing infection and improving outcomes once it occurs.

From the second one shows up at Apollo Health city, Hyderabad the individual turns out to be essential for the custom of recognized medical care. We are pushing ahead towards driving the world in the diagnostics and treatment of sickness and to deliver the upcoming extraordinary doctors, medical caretakers, and researchers. We are propelled to give the best medical care and administration to all patients with an extra intercession called the special attention.

We all know that meticulous care entails more than just good medicine. Apollo Health City in Hyderabad is attempting to move beyond good medicine and towards good health. Being the first city in Asia to do so creates impetus for more of these institutes to open, putting Hyderabad on the worldwide map of high-quality healthcare.

Apollo Hospitals, Hyderabad handles near 100,000 patients every year. Global patients from the UAE, Tanzania, Oman, the USA, Kenya, and adjoining Asian nations are treated by the clinic consistently.

International and National Accreditations

Joint Commission international

Apollo Hospitals in Hyderabad is one of the few hospitals in South India to be certified by the Joint Commission International (JCI), the world class standards. We received the Gold Seal of Quality after undergoing a rigorous review procedure that included critical criteria such as patient safety and consistent quality. It is significant to us because it reaffirms our commitment to providing the best treatment possible. JCI accreditation is valid from April 17th, 2021, to April 16th, 2024.

NABL

Apollo Hospitals, Hyderabad is one of the hospitals to receive NABL certification in six separate categories namely Histopathology, Chemical Pathology, Haematology and Immunohematology, Clinical Biochemistry, Cytopathology, Microbiology and Serology.

ISO 22000:2005 – HACCP Certification

The Apollo Sindoori Food and Beverage Department, part of Apollo Hospitals (AH), Hyderabad, is the first F & B Department in India to receive the coveted ISO 22000:2005 - HACCP accreditation. The British Standards Institution (BSIUK) has authorized it.

The most recent ISO 22000:2005 - HAACP review took place on July 27-29, 2011, and the AGH F&B was updated to comply with all principles and standards. For a prolonged term, the ISO 22000:2005 – HAACP certification is valid. The extent of the study and certificate incorporates "Receipt, Storage, Preparation and Delivery of Cooked and Uncooked Food for In House Patients, Outdoor Patients and Food and Beverage Outlets."

The ISO 22000 (HAACP) is a sanitation-by-the-board framework for food handling that includes the examination and control of natural, synthetic, and actual hazards from the creation, acquisition, and handling of raw materials through the assembly, dispersion, and the use of the product. The proposals and rules have been implemented for the past year and a half. It entailed basic planning and documentation, extensive interface improvement, and the delivery of safe food to our patients and consumers.

AAHRPP accreditation

Apollo Hospitals has been granted full accreditation for three years by the Association for the Accreditation of Human Research Protection Programs, Inc. (AAHRPP), granting Apollo the global Gold Seal awarded to institutions that upholds the highest standards of quality in research.

The hospital locations accredited are Apollo Hospitals Chennai (Apollo Main Hospital, Apollo First Med hospital, Apollo Specialty hospital, Apollo Hospitals Vanagaram, Apollo Tondiarpet Hospital, and Apollo

Children's Hospital), Apollo Hospitals Ahmedabad, Apollo Hospitals Hyderabad (Apollo Hospitals DRDO, Apollo Health City Jubilee Hills, Apollo Hospital Secunderabad and Apollo Hospitals Hyderguda), Indraprastha Apollo hospital and New Delhi, Apollo Specialty Hospitals Madurai.

Centre of Excellence

The Apollo Hospitals, Apollo Health City, Jubilee Hills Hyderabad has dedicated Centres of Excellence for several specialities and even super specialities. It encompasses unique and state of the art facilities across several locations and each is a citadel of excellence.

These includes Centre of Excellence for-

1. Cardiology
2. Orthopaedics
3. Spinal sciences
4. Cancer care
5. Neurosciences
6. Gastroenterology
7. Organ transplantation
8. Nephrology and urology
9. Critical care
10. Bariatric surgery
11. Robotics based surgical interventions.
12. Preventive Medicines
13. 24 hours emergency
14. Colorectal surgery

Departments

1. Emergency
2. Radiology
3. Operation theatre
4. Critical care unit
5. Gastroenterology
6. Orthopaedics
7. Neurosciences
8. Obstetrics and Gynaecology
9. Pulmonology
10. Oncology
11. Preventive measures
12. Ophthalmology
13. Bariatrics
14. Paediatrics and Neonatology
15. Physiotherapy
16. Nephrology
17. E.N.T
18. Laboratory

19. Radiology
20. Blood bank
21. Information Technology
22. Marketing and Corporate relations
23. Finance and Accounts
24. Human Resource Management
25. Medical records
26. Biomedical engineering
27. Laundry Services
28. Food and Beverages

Outpatient Department

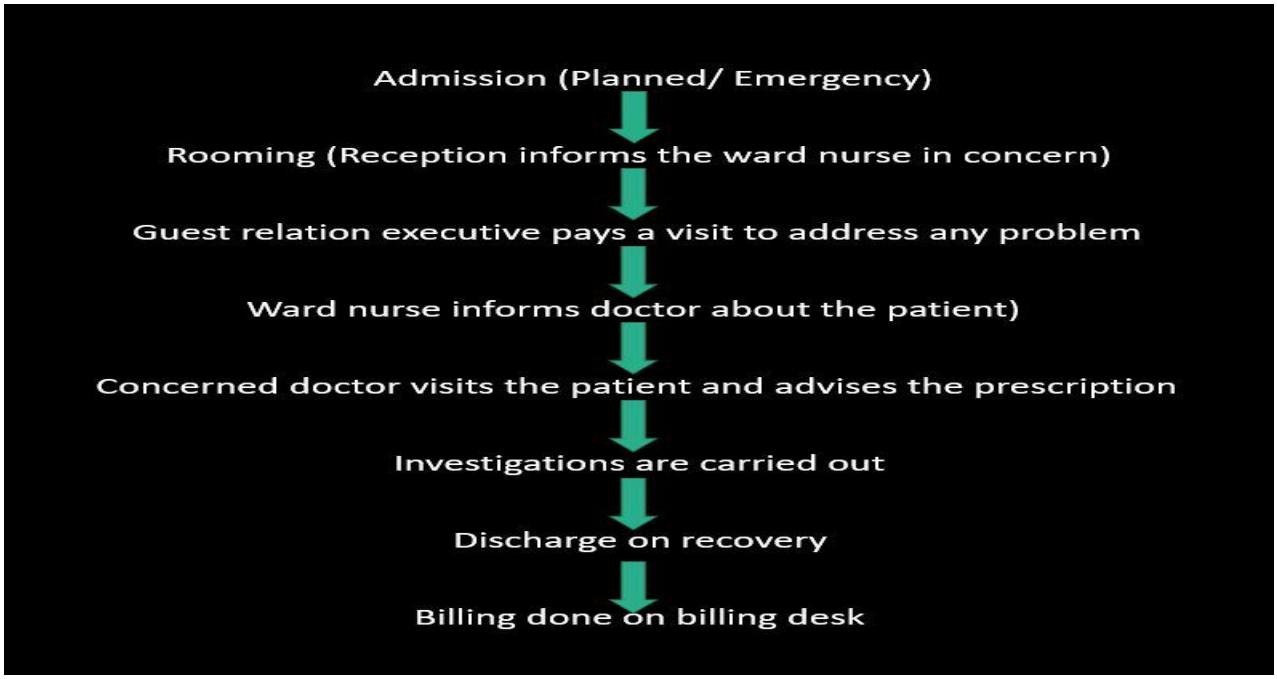
The OPD is the first point of contact between the patient and the hospital.

The general OPD process in Apollo hospital Jubilee Hills, Hyderabad is given below:

Inpatient Department (IPD)

The IPD is the department where the patients are admitted in the hospital. This means that the IPD patients are those who spend a minimum one night in the hospital for their treatment.

The general process flow for the IPD patients in Apollo Hospitals, Jubilee Hills, Hyderabad is as follows:



Emergency Medicine Department

The emergency medicine department (EMD) is the hospital's front-line division for patient care, and it provides quick access, adequate transport, and treatment in pre-hospital care, as well as high-quality emergency care to all patients that approach the EMD.

The Emergency Room, or ER, is one of the hospital's most vital and active departments. Emergency physicians, nurses, housekeeping, and other staff provide on-hospital treatment. They are available 24 hours a day, seven days a week, 365 days a year. Considering ER visits are typically unanticipated, the department is required to provide initial treatment for a wide range of illnesses and injuries, some of which might be life-threatening and necessitate emergency medical attention.

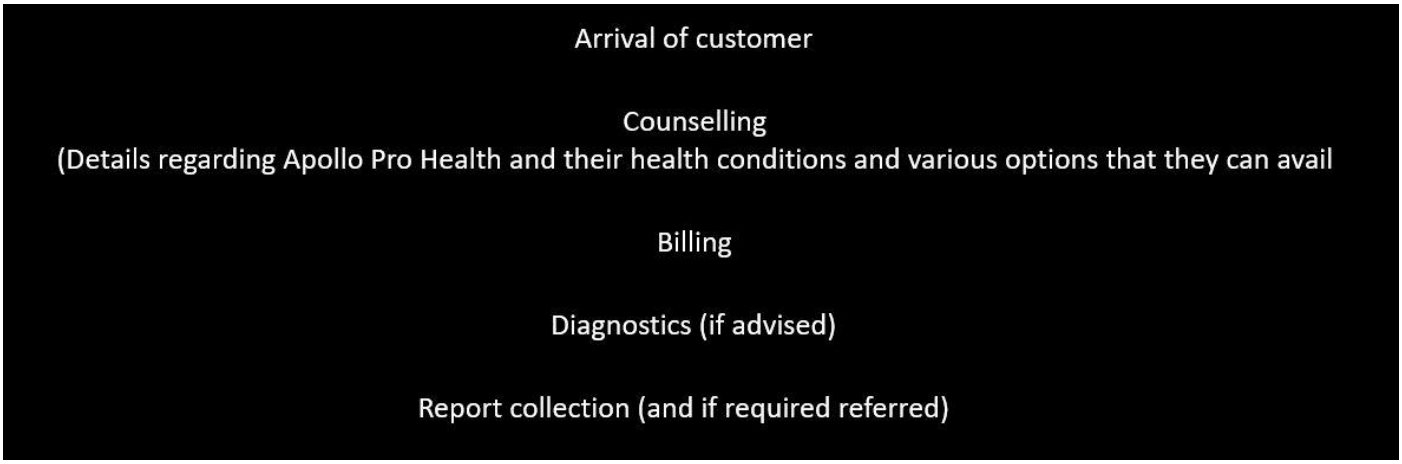
There is total 20 beds in the ER (including isolation bedroom). Access to the emergency room is dedicated and separate from the main entrance. For security 24 hours security personals controls the access.

The emergency medicine department is located on the ground floor. The ER floor area is divided into the following areas:

1. Triage room
2. Isolation room
3. Registration desk
4. Attendant’s waiting area
5. Nursing and in-house billing desk
6. Resuscitation area
7. Treatment area
8. Clean utility, Dirty utility, and Toilets
9. Emergency physician consultation room
10. Decontamination area

Personalized Health Check-up

With today's sedentary lifestyle and no time for physical exercises and in addition to its environmental degradation, majority of the population is prone to lifestyle disorders. Apollo's Personalized Health Check-up also known as Apollo's Pro Healthcare preventive health check-up plans for the customers. Here individuals can avail personalized/ tailored to fit plans according to assessment and needs. The operational procedure of Apollo's Pro health is as follows.



Critical Care Units

Patients with severe illnesses receive high-quality care in critical care units. Patients are advised by the members of the critical care consulting group. They also meet with primary consultants to ensure that patients receive high-quality care.

In Apollo Hospitals, Apollo Health City, Jubilee Hills; the following critical care units are segregated as:

1. Medical CCU
2. Surgical CCU
3. CATH CCU
4. Neonatal CCU
5. Neuro CCU
6. BMT CCU
7. Burns CCU
8. CT Post-Operative CCU

Operation theatre

The hospital has 18 OTs which are categorized into three sections:

Section	Floor	Number of OTs	Timing	Day off
Main Block	1	10	24X7	None
International Block	-1 (Basement 1)	4	0800 hours to 2000 hours	Sunday and Public holidays
Cardio-thoracic	1	4	0800 hours to 2000 hours	Sunday and Public holidays

Cancer Institute

The Apollo Cancer Institute is in the Apollo Health City Campus but as a separate unit from the main block of the Apollo Hospitals.

The total bed count is 26, which is as follows:

1. General Ward- 11 beds
2. Single room- 9 beds
3. Deluxe room- 3 beds
4. Glass door room- 3 beds

Blood bank

Apollo Hospitals Hyderabad has a licensed blood bank with Component and Pheresis lab. It successfully meets the blood transfusion requests even for rare blood groups. It offers 24 hours service and has an excellent diagnostic and support service. It also offers fresh transfusions for emergency/ traumatic cases.

Radiology Department

The primary objective of the radiology department is to provide imaging diagnostic services helping the physicians plan the treatment of the patient.

The department is well equipped with state-of-the-art equipment and provides the following facilities:

1. Conventional Radiology
    a. Plain radiography
    b. Barium swallow, meal, follow through.
    c. IVP, RGU, MCU
2. Imaging facilities
    a. US including doppler.
    b. CT Scan
    c. MRI including MR angiography.
    d. Mammography
3. Invasive procedure
    a. Percutaneous needle therapy
    b. Percutaneous drainage procedure

Laboratory Services

The hospital laboratory services provide essential diagnostic services which help the physician making decisions related to the treatment of the patient.

The sample collection from the patients on Outpatient basis is done through the sample collection department. Whereas for the Inpatient department the samples are directly dispatched through the sample dispatch boys.

The internal bifurcation in the Hospital laboratory is:

1. Biochemistry
2. Haematology

3. Microbiology
4. Transfusion services
5. Immunology
6. Surgical pathology
7. Cytology
8. Histopathology
9. Radioimmunoassay

Central Sterile Services Department (CSSD)

The CSSD is located on the third floor of the hospital. The department is functional 24X7. There are multiple methods of sterilization followed based on the pre-determined protocols for sterilization and disinfection. The inventory for CSSD is as follows-

Method of sterilization	Number of equipment available
Steam	3
Plasma	3
Ethylene oxide	1

Medical records department

The medical department is in the basement-3 level. The hospital stores physical records of the patients i.e., hard copies of the files. The files are stored according to the registration number of the patient. The hospital also maintains digital copies of the same by scanning them and storing them in the central servers.

The records are kept for duration as directed by the government. It is as follows:

1. OPD records- 3 years
2. IPD records- 10 years
3. Medico-legal cases- 15 years
4. Death records- 15 years
5. Birth records- 18 years

Post the allocated duration, the records are shredded based on rules as posted by Central Government and health department as per the Health Insurance Portability and Accountability Act.

Information technology (I.T) department

The IT department is in the Basement-3 level. This department was outsourced from Tata Consultancy Services (T.C.S) but in past two years the contractual staff was converted into full time staff for Apollo Hospitals Enterprise Limited.

Biomedical engineering department

The biomedical engineering department is located on the fifth floor of the main hospital block. This department is outsourced from Channel Biomed. Their functions include-

1. Repair faulty equipment with least possible downtime and financial loss.
2. Follow planned preventive maintenance of the equipment regularly as per schedule.

3. Training staff for the optimal usage of equipment.
4. Coordinate with purchase, finance department and operations department for procurement of equipment and spares as required.

Finance department

As the Apollo Hospitals Enterprise Limited is comprising of a chain of corporate hospitals and clinics, it is of utmost importance to maintain the financial status and audit it regularly. The finance department on the 4th floor of international block works in proximity with the Corporate Relations department. The AHEL have a separate section on their website displaying financial reports for the investors to have a look at prospects. They prepare and upload unaudited quarterly reports and audited annual reports.

Food and Beverages

For a hospital it is essential to provide clean, healthy, and hygienic food services for the patients as well as the staff, residents, and visitors. The dietary needs of the patients are assessed daily by the dieticians upon prescriptions from the consultants which in turn results in forming a diet chart for each patient.

Apollo Hospitals Hyderabad maintains the food and beverages services by Apollo Sindoori, which turns out to be one of the leading hospital caterers in India. They work in coordination with dieticians to provide services to the patients according to their specific needs. A choice between Indian and continental cuisines are available to have taste of.

Project Report

Introduction:

Title:

An assessment of resource optimization by Apollo Kavach programme of Apollo Hospitals for utilizing hotel beds as a substitute to hospital beds for isolation services and providing medical facilities to patients with COVID 19 RT-PCR positive status in India during the pandemic.

Rationale:

During the COVID-19 pandemic the hospitals are struggling to provide for medical in-patient services to patients flooding in with RT-PCR Positive status. The biggest challenge remains providing beds and isolation facilities to 'mild to moderately' symptomatic patients due to the humongous population of our county and when compared to the medical structure of the same turns out to be vastly insufficient.

During this period of struggle Apollo Hospitals has come up with a project utilising the back-end support of the Hospital facilities and the front-end support from the Apollo 24/7 online availability. In this a project was launched by the name Apollo Kavach, which utilizes the poor performing hotel and hospitality industry and forming tie-ups with them to use their potential for providing the population with services which benefits both the population as well as the hospitality industry for the greater good.

Research Question

The title of the project identifies the 5 W's of a research question.

1. What- Resource optimization and expansion of operations,
2. When- During COVID 19 Pandemic,
3. Who- By Apollo Hospitals for the COVID 19 RT-PCR Positive patients and contacts with asymptomatic status,
4. Where- Indian subcontinent specifically 8 major cities,
5. Why- To cope with the shortfall in bed counts when compared to the large population requiring medical facilities for managing COVID-19 disease and isolation.

Objectives:

- To understand the coping mechanism of hospitals in shortfall of bed allocation for COVID-19 patients and how they deal with provisions of the medical facilities.
- To analyse resource allocation, utilization, and delays in allocation of resources for patients requiring services.
- To analyse the expense mapping and inputs for profit maximization.

Study Design:

The study design is:

1. Descriptive

2. Applied
3. Cross-sectional

The research approach is quantitative. The data collection was done using secondary data obtained from central Apollo Kavach online tracker.

Sampling:

The sampling technique used is non-probability, convenience sampling. Data was obtained from the online Apollo Kavach tracker from 8th April 2021 to 21st June 2021 and taken into consideration for this study. The sample size for the research is 2868.

Methodology:

Methodology- The study was conducted at Apollo Hospitals Hyderabad which were supervising the following cities:

1. Hyderabad
2. Bengaluru
3. Mumbai
4. Chennai
5. New Delhi
6. Pune
7. Indore
8. Guwahati

Data collected in a tabular format with following entities- City, Facility name, Room number, Room type, Guest Credentials, Date of entry, Date of exit and Number of days stayed.

Data Collection:

The data for the study was collected and combined from the online tracker of Apollo Kavach and Stay-I hotels.

Apollo - Project Kavach

The COVID-19 pandemic has spread to every country on the planet, claiming lives, crippling economies, and causing global chaos and terror. With the increasing number of COVID-19 cases in India, we must all contribute everything that we can to deal with this singularly unprecedented global occurrence of our lifetimes.

Since not all COVID-19 patients with symptoms require hospitalisation, Apollo Hospitals Group has developed an innovative COVID-19 home care solution called Stay I @HOME to fulfil the need for supervised Home Isolation.

Stay I @HOME

Apollo Homecare's Stay I @HOME is a restoratively administered detachment at home assistance. The administrations rely on the Indian Council of Medical Research (ICMR)/Ministry of Health and Family Welfare (MoHFW)'s most recent standards, which recommend disconnection for patients at home who are pre-indicative or have a lot of symptoms. Other mild signs are either certain or linked to COVID-19.

Services

Stay I @HOME is a comprehensive approach of medical care and consulting services that must be provided to COVID-19 patients for the duration of their home quarantine period, which is 14 days.

- CLINICAL NEEDS

1. Observing the indispensable signs, like heartbeat, temperature, respiratory rate, oxygen immersion levels

2. Monitoring of COVID side effects according to the rules of ICMR

3. For patients with comorbidities evaluation and the board for instance High BP, Diabetes, COPD, Asthma and any Heart-related issues.

- EDUCATION AND AWARENESS

1. The team works with patient and the family members to educate everyone on
2. Do's and don'ts to be followed during the confinement time frame.
3. The parts just as the obligations of the guardian
4. The methodology for surface cleaning, disinfecting the room, garbage removal, and so forth.
5. The patient's very own cleanliness and security
6. Downloading and working the Arogya Setu APP
7. High alerts to advise the doctor.
8. Utilization of pack given to disengagement for both patient's and parental figures.

- DIETARY AND NUTRITION NEEDS

1. Week after week nourishment appraisal and direction on building insusceptibility by nutritionist.
2. Furthermore, follow-up calls by an expert dietician.

- MOTIVATION AND ENGAGEMENT

1. A mentor will be apportioned to patient every day in your space of your advantage to assist you with beating the fatigue.
2. Drawing in the patients arranged, shock and gathering exercises like games, tests, persuasive discussions, and so on in view of the preferences.

- MENTAL HEALTH AND WELLNESS

1. Itemized Mental Health Assessment by an expert analyst to survey the passionate solidness.
2. Direction will be given to address the pressure factors, for example, financial weakness/forlornness and sadness.

- MOVEMENT AND MOBILITY

1. Everyday appraisals on actual capacities by our master physiotherapist.
2. Day by day virtual recovery meetings (30 minutes) directed by proficient physiotherapist.
3. Unique spotlight on breathing activities utilizing YOGA and motivating force spirometry.

- SUPPORT SERVICES

1. If there should arise an occurrence of any deteriorating of side effects or any new turn of events, our group drove by a doctor will direct you to a higher degree of treatment.

Roles and Responsibilities of a Patient

- ❖ The parental figure must ensure that appropriate material is identified and dedicated for the patient.
- ❖ The parental figure should monitor the patient's symptoms and signs daily and keep track of anything identical.
- ❖ The family will identify the parental figure, who will be the single human associated with the COVID-19 positive patient's detachment room.

Roles and Responsibilities of a Caregiver

- This parental figure needs to follow severe rules of hand washing, cleanliness, utilizing the cover, and so forth while cooperating with the patient.
- A caregiver should be available to the patient 24 hours a day, seven days a week, and follow all of the ICMR guidelines.

Apollo Stay I @ Home Plans

- Basic Plan: 14 days @ Rs.300/Day
- BASIC PLAN –4199/-

Service Provider	Frequency	Type of consult	No. of consults
Physician	Every alternate day	Virtual	7
Nursing Supervisor	Every Day	Tele-Call	14

- Advance Plan: Focus on clinical, emotional, dietary, mobility and immunity needs – 14 days @ Rs.600/Day
- ADVANCE PLAN – 8399/-

Service Provider	Frequency	Type of consult	No. Of Consults
Physician	Every alternate day	Virtual	7
Nursing Supervisor	Every day	Tele-call	14
Motivational	Every alternate day	Virtual	7
Tele Rehab	Week-1: Daily Week-2: Alternate day	Virtual	10
Dietician	Weekly once	Virtual	2
Counsellor	Weekly once	Virtual	2

Apollo Stay I@Home Kit

(5999/-)

1. Examination gloves

2. 3 ply Mask

3. Digital Thermometer

4. Paper gloves

5. Waste Disposal Bags

6. Incentive Spirometer

7. Sanitizer-Hand wash

8. Surface Disinfectant spray

9. Pen

10. Pulse Oximeter

11. Anti-Bacterial Wipe

12. Spiral Note Pad

Enrolling in the program involves the following process:

- Visit the website (Apollo Hospitals Enterprise Limited, n.d.) to make your selections online, or call the Stay I @Home helpline at 1800-102-8586.
- Or on the other hand download the 24|7 App and select home help and enlist.
- Enrolment should likewise be possible by contacting Apollo Home Care work area at any of the Apollo Hospitals (Chennai, Hyderabad, Delhi, Bengaluru, Kolkata), or give a call on the helpline:1800-102-8586.
- After you have enrolled, an organiser will give you a tour of the programme.
- If you have chosen the home disengagement unit, a home segregation kit will be delivered to the allocated location within 6 hours after enrolling. There will be two components to the pack:
- One will be for the parental figure.
- While the other will be for the patient.
- Following that, a dedicated doctor will be assigned as a Single Point of Contact (SPOC) for the duration of the Home Isolation Program.
- The patient and guardian will be offered educational materials.
- Every day, according to the purchased programme, media transmission will be made to keep track of your well-being and prosperity during your Home Isolation.
- A virtual cooperation plan will be distributed via email and WhatsApp.
- If your condition worsens in the event of a crisis, contact your designated SPOC. Following the evaluation, the patient will be given the option of continuing care at home or being transferred to a facility. Inform your doctor as soon as possible.

Stay I @ Hotel

To interrupt the COVID19 disease's chain of transmission, social distancing and isolation care are often required. Apollo has dispatched Project Stay-I in search of a more focused medicinally regulated segregated consideration. Stay-I is an innovative approach that aims to improve the fight against COVID-19 by establishing seclusion rooms in hotels with little clinical care for isolate. They guarantee individuals recuperate without spreading COVID-19 and are managed on the off chance that they need to move to clinical offices at the ideal opportunity. This guarantees that individuals who are not basically wiped out ought not involve the clinic beds and opening the scant asset for more basic patient.

To guarantee reasonable rooms with appropriate safety, Apollo Hospitals has united with Hindustan Unilever, Deutsche bank, State Bank of India, Lemon Tree, Oyo Rooms, Zomato and Ginger inns and has dispatched a social effect drive. The working conventions, as well as a working and monitoring system, have been established, and the initiative was declared on March 30, 2020. As a feature of stage 1, we dispatched 100 rooms in Bengaluru, Hyderabad, Chennai, Kolkata, Delhi, and Mumbai.

At Apollo Hospitals Hyderabad, the full supply chain for Stay-I is being established, including functioning protocols, functions, and a monitoring system.

A guest who wants to book a room under the Stay-I programme should go to www.apollohospitals.com and fill out the form. Visitors can also benefit from this office by calling the 18605000202 helplines, which is available 24 hours a day, seven days a week. Within three hours of receiving the details, the Apollo Hospitals team would contact the visitor with a booking confirmation and registration requirements.

- Sanitised rooms
- Doorstep delivery of medicine
- Doorstep Sample collection
- Free Wi- Fi
- Contactless Food delivery
- Virtual doctor Consultations and rounds

Round-the-Clock Virtual Consultation

We have launched an intelligent web stage called Apollo 24 I 7, which is India's largest end-to-end omnichannel medical care platform, allowing clients from all over the country to use Apollo administrations from their mobile phones. The stage currently offers a comprehensive range of medical services administrations, including 24x7 consultations with Apollo doctors across specialties, quick and convenient home delivery of medications, symptomatic test booking, computerised health records, and so on.

Apollo 24/7 was created with the belief that mastery is for everyone, with the goal of providing individuals with trusted information and high-quality resources to help them manage their health, wealth, and security. With the increased acquisition of health data, we expect a greater proportion of dynamic to be based on artificial knowledge when it comes to maintaining our health. As a result, we're working on a proactive strategy to ensure that our clients receive their benefits on a continuous basis.

Literature review

1. Assessing healthcare capacity in India- https://www.mercatus.org/publications/covid-19-policy-brief-series/assessing-healthcare-capacity-india
    a. Author- Shruti Rajgopalan, Abishek Choutagunta
    b. Date- 07-April-2020
    c. Key findings- Given that India's private-sector medical care system is better equipped to combat COVID-19 than government offices, the country should rely on and strengthen responses from the private sector and the public. This is best accomplished by rapidly increasing the financial plans available to combat COVID-19 and removing bottlenecks such as single-point acquisition offices and cost and quantity limits on basic clinical devices.
    d. India COVID-19 preparedness, India COVID-19 lockdown, public health, economics, quarantine, economy, economic crisis.

2. Healthcare delivery in India amid the Covid-19 pandemic: Challenges and opportunities- https://ijme.in/articles/healthcare-delivery-in-india-amid-the-covid-19-pandemic-challenges-and-opportunities/?galley=html
    a. Author- Pragati B Hebbar, Angel Sudha, Vivek Dsouza, Lathadevi Chilgod, Adhip Amin
    b. Date- 31-May-2020
    c. Key observations- Utilizing innovation for conference, further developing readiness, giving drugs at doorsteps, Streamlining travel during lockdown periods and Effective and straightforward correspondence.
    d. Key words- Covid -19, OPD services, Indian health system, lockdowns, teleconsultation, healthcare access, ethical challenges, co-morbidities.

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    a. Author- Veenapani Rajeev Verma ,Anuraag, Saini, Sumirtha Gandhi, Umakant Dash, Shaffi Fazal-u-din Koya
    b. Date- Infectious Disease Modelling Volume 5 2020, Pages 608-621
    c. Key findings- We calculated the flood limit, which is determined by the number of cases and foundations dedicated to COVID-19 patients, by determining the timeframe in which Indian medical centres will face a serious emergency in terms of bed and ventilator availability. If social separation measures and limitations are implemented for the remainder of the year for gentle, extreme, and basic circumstances, the limit will need to be removed during busy times. The degree of health foundation that should be stepped up to satisfy the true requirement during hectic times is shown by shaded boxes. As previously stated, the flood limit will most likely fluctuate depending on the testing conditions. For example, our potential and need side projections show that the Indian medical services framework is facing a massive shortfall in terms of medical care foundation accessibility, particularly for serious and basic cases, when current social separating measures are considered with current testing integration of 900,000 every day and recent TTP of 9.7%.
    d. Key words- Capacity-need gap, Numerical model, COVID-19, Policy India.

4. Monitoring and Surveillance of COVID-19 Survival and Stay Characteristics: A Need for Hospital Preparedness in India- https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/monitoring-and-surveillance-of-covid19-survival-and-stay-characteristics-a-need-for-hospital-preparedness-in-india/075A402F2B9D85A6C4103B8B82976122
    a. Author- Ajit Deo Burma, Vinayak Mishra, Sumit Kumar Das, Mohana Balan Parivallal, Senthil Amudhan, Girish N. Rao
    b. Date- 20-August-2020
    c. Key findings- As the COVID-19 pandemic progresses, the stay and endurance features may change as infection qualities improve or as affirmation/release models change. Because the age structure, COVID-19 regions of interest, and medical clinic beds are not identical across the country, the requirement for clinic assets is best determined based on data from the local setting.
    d. Key words- hospital records, community health planning, communicable disease, hospital bed capacity.

5. Network-based Modelling of COVID-19 Dynamics: Early Pandemic Spread in India- https://www.medrxiv.org/content/10.1101/2021.03.16.21253772v1
    a. Author- Rupam Bhattachayya, Sayantan Banerjee, Shariq Mohammed, Veera Baladandayuthapani
    b. Date- 16-03-2021
    c. Key findings- The social texture comprises of broad family and cultural organizations. The test is thinking of prompt reactions, like fast lockdowns, that will lastingly affect numerous classes of society, particularly the metropolitan poor. What is required is a strong and manageable methodology, with local affectability and public availability. Pushing ahead, a system is required which makes India's thickness its benefit in managing COVID-19 and future pandemics. Utilizing innovative foundations, like utilizing the huge portable organization of India — guarantees that the updates about friendly removing, handwashing and cleanliness are not ignored. This can likewise guarantee that testing is vital (impractical to test everybody), contact following is quick (when an individual is tried positive it is somewhat simple to follow past contacts and detach them promptly), and isolate is savvy (right degree of isolate dependent fair and square of hazard).
    d. Key words- Compartmental Modes, COVID-19, Forecasting, Network dynamics, Network Modelling.

6. A Closer Look into Global Hospital Beds Capacity and Resource Shortages During the COVID-19 Pandemic- https://www.sciencedirect.com/science/article/pii/S002248042030812X
    a. Author- Brendon Sen-Crowe, Mason Sutherland BS, Mark McKenney, Adel Elkbuli
    b. Date- 24-11-2020
    c. Key findings- Global COVID-19 death rates are possible influenced by numerous components, including emergency clinic assets, staff, and bed limit. Higher pay districts of the world have more noteworthy ICU, intense consideration, and emergency clinic bed limits. Required detailing of ICU, intense consideration, and clinic bed limit/inheritance and data identifying with Covid ought to be executed. Receiving a tiered basic consideration strategy and focusing on the expansion of room, staff, and supplies may help to broaden the scope of treatment provided during resurgences and future disasters.
    d. Key words- Bed capacity, COVID-19, Global health, Hospital resources.
7. Effects of the COVID-19 pandemic in India- An analysis of policy and technological interventions- https://www.sciencedirect.com/science/article/pii/S2211883720301465
    a. Author- Isha Goel, Seema Sharma, Smita Kashiramka
    b. Date- Health Policy and Technology; Volume 10, Issue 1, March 2021, Pages 151-164

c. Key findings- The spread of COVID-19 in India was at first portrayed by less cases and low case casualty rates contrasted and numbers in many created nations, essentially because of a severe lockdown and a segment profit. Be that as it may, monetary requirements constrained a stunned lockdown leave procedure, bringing about a spike in COVID-19 cases. This factor, combined with low spending on wellbeing as a level of total national output (GDP), made commotion due to insufficient quantities of clinic beds and ventilators and an absence of clinical faculty, particularly in the general wellbeing area. By the by, mechanical advances, upheld by a solid examination base, contained the harm coming about because of the pandemic.
d. Key words- India, Pandemic, Health, Policy

8. The J-IDEA Pandemic Planner- A Framework for Implementing Hospital Provision Interventions During the COVID-19 Pandemic- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7610624/
    a. Author- Paula Christine, Josh D'Aeth, Alessandra Lossen, Ruth McCabe, Dheeya Rizmie, Nora Schmit, Shevanthi Nayagam, Marisa Miraldo, Paul Aylin, Alex Bottle, Pablo N. Perez-Guzman, Christl A. Donelly, Azra C. Ghani, Neil M. Ferguson, Peter J. White, Katharina Hauck.
    b. Date- P.M.C, U. S Library of Medicine Med Care, May 2021
    c. Key findings- The consequences of the contextual analysis show that while field medical clinics ease the weight on the quantity of beds accessible, this intercession is purposeless except if the shortage of basic consideration attendants is tended to first.
    d. Key words- Health systems capacity, COVID-19, adult critical care, hospital provision interventions, critical care, pandemic response, hospital capacity.

9. Apollo Hospitals and Project Kavach: Insights from How India's Largest Private Health System Is Handling Covid-19- https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0677
    a. Author- Anupam Sibal, Hari Prasad, Sangita Reddy, P. Murali Doraiswamy
    b. Date- 24 February 2021
    c. Key findings- Venture Kavach was intended to mediate proactively at each stage — identification, testing, segregation, and treatment — and was considered fruitful by and large. In the Apollo framework, 55,199 patients (6,081 in serious consideration units) have been treated for Covid-19, and the inpatient death rate has diminished from 3.02% (June–August 2020) to 2.38% (September–November 2020). While similar insights are not accessible to us from other Indian emergency clinics, these rates contrast well and those in Western countries.

10. Innovative ideas to sustain in Covid-19 lockdown-A case study- https://www.ipinnovative.com/media/journals/JManagResAnal-7-2-84-881.pdf
    a. Author- Ravitheja Jampani, Vasireddy Yasaswini
    b. Date- Journal of Management Research and Analysis, April-June 2020
    c. Key findings- Private isolation rooms to address hospital bed shortages with backing from select hospitality operators is also an excellent novel idea.
    d. Key words- Survival in covid-19, Covid-19 crisis, new jobs during Covid pandemic, Innovative ideas during covid-19.
11. A Systematic Review of Smartphone Applications Available for Corona Virus Disease 2019 (COVID19) and the Assessment of their Quality Using the Mobile Application Rating Scale (MARS)- http://hdl.handle.net/123456789/10796
    a. Author- Vikas Aggarwal, Durga Prasanna Mishra, Ashish Goel, Latika Gupta
    b. Date- 2020

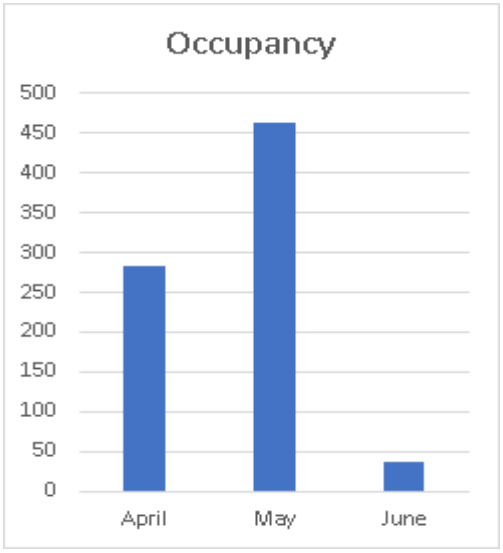
c. Key findings: We found 63 programmes that are currently being used for COVID-19 during our search. Twenty-five were chosen from the Google Play and Apple App stores in India, and 19 from the UK and US, respectively. On COVID-19, 18 applications were designed for exchanging extraordinary data, 8 were used for contact tracking, and 9 applications combined the two. On the MAR Scale, overall scores ranged from 2.4 to 4.8, with high scores in usefulness and low scores in engagement. Future advancements should involve the development and testing of mobile applications using evaluation tools such as the MAR scale, as well as the examination of their impact on wellness behaviours and outcomes.

Data Analysis and Interpretation

ANALYSIS 1: State wise occupancy

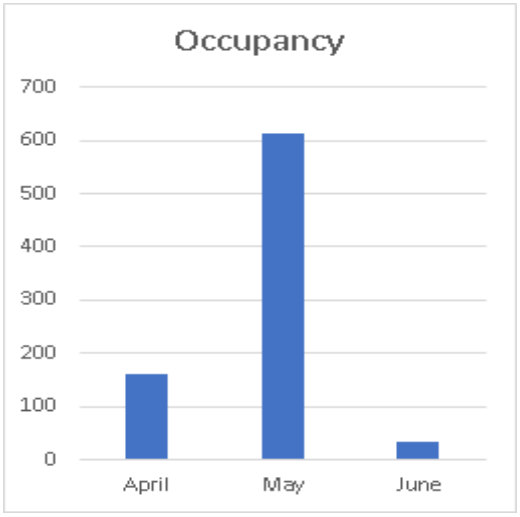
Bengaluru – 782

Month	Occupancy
April	284
May	462
June	36



Chennai- 808

Month	Occupancy
April	162
May	613
June	33

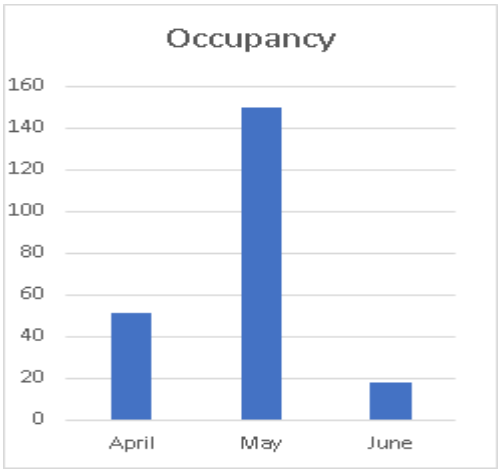


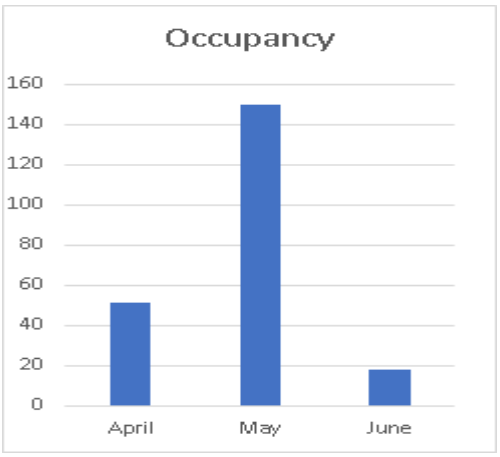
Guwahati-219

April	51
May	150
June	18

Hyderabad-464

April	95
May	318
June	51



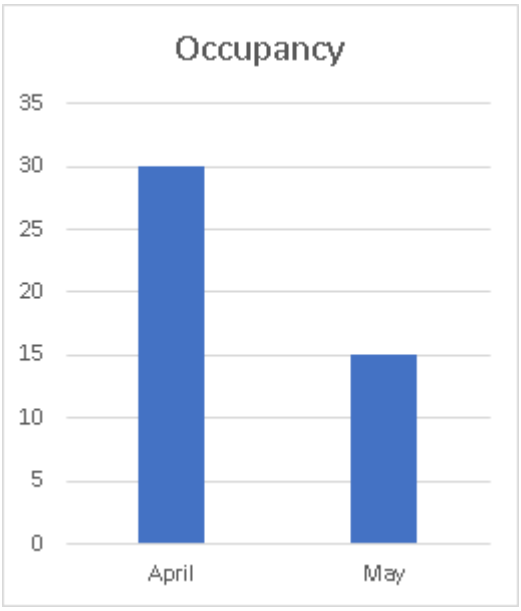


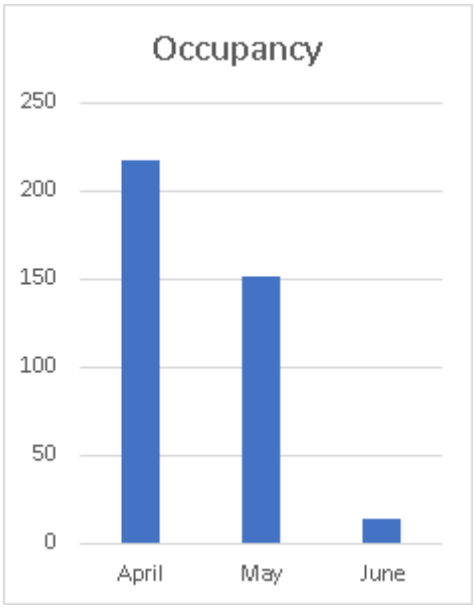
Indore– 45

Month	Occupancy
April	30
May	15

Mumbai- 382

Month	Occupancy
April	217
May	151
June	14



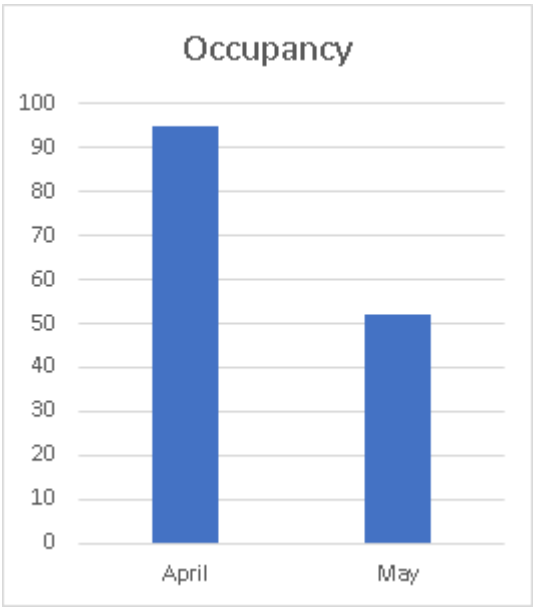


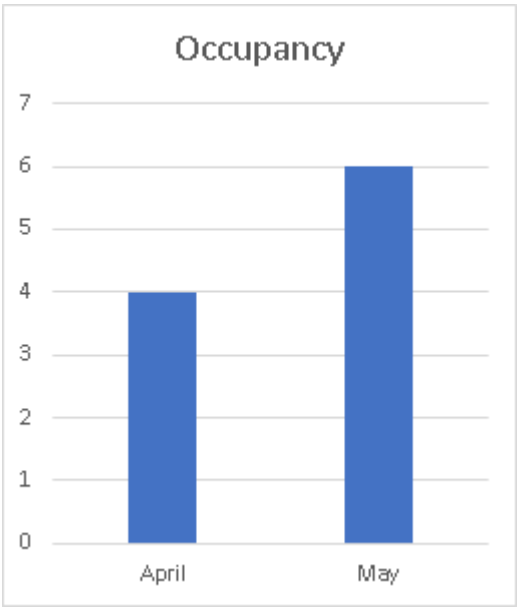
New Delhi– 147

Month	Occupancy
April	95
May	52

Pune-10

Month	Occupancy
April	04
May	06

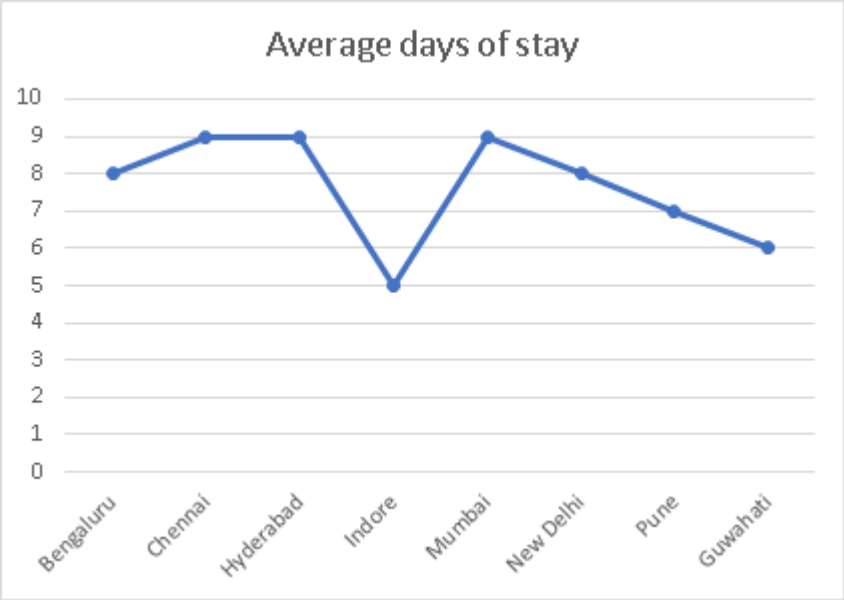




Interpretation: The above charts depict the effect of the rise and dip in the number of COVID positive cases on the facilities of the different states. It has been observed that the number of patients seeking isolation peaked during the month of May in Bengaluru, Chennai, Guwahati, Hyderabad, and Pune. However, New Delhi, Mumbai and Indore show higher number of patients during the month of May.

ANALYSIS 2: Average days of stay

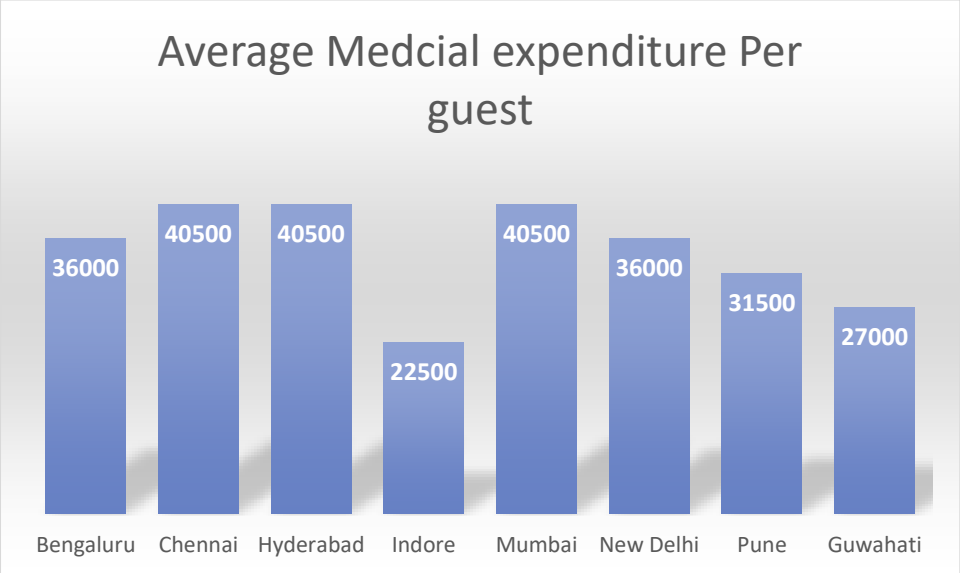
City	Average number of days
Bengaluru	08
Chennai	09
Hyderabad	09
Indore	05
Mumbai	09
New Delhi	08
Pune	07
Guwahati	06



Interpretation: The average number of days the patients were seeking isolation was eight days in Bengaluru and New Delhi while Chennai, Hyderabad and Mumbai saw an average of 9 days. Patients in Indore, Guwahati and Pune were isolated for an average of five, six and seven days, respectively.

ANALYSIS 3: Average Medical expenditure by patients in Project Kavach:

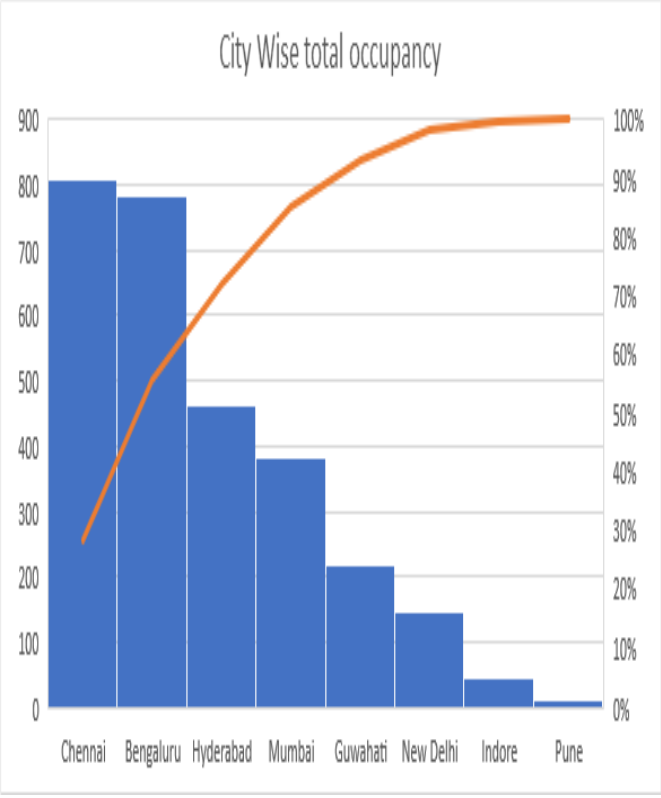
City	Average Medical expenditure Per guest
Bengaluru	36000
Chennai	40500
Hyderabad	40500
Indore	22500
Mumbai	40500
New Delhi	36000
Pune	31500
Guwahati	27000

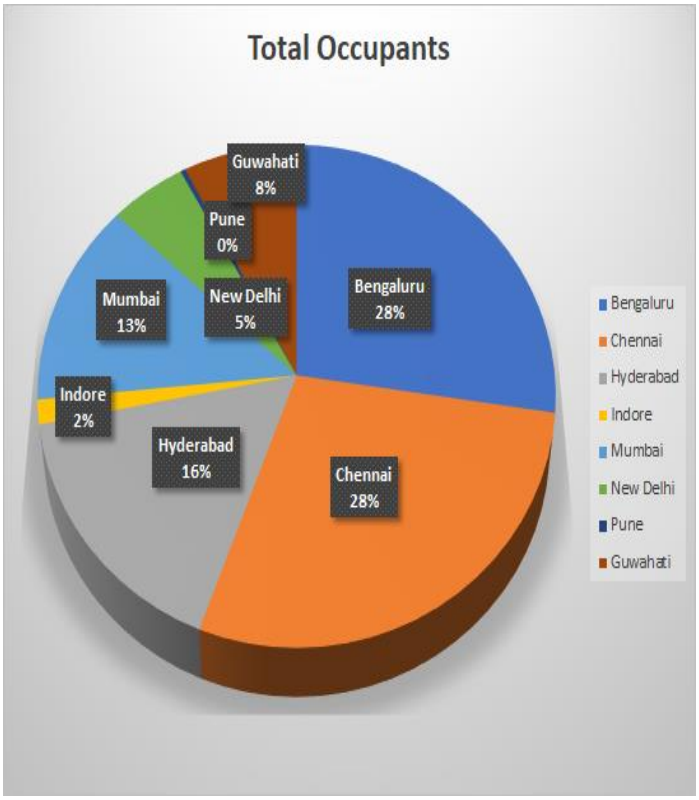


Interpretation: The revenue generated from the charged medical fees were highest from the cities of Mumbai, Hyderabad and followed by Chennai. Reason behind the higher generation is the higher number of rooms available in these cities by inclusion of more hotel facilities in those cities.

ANALYSIS 4: Percentage of total occupants

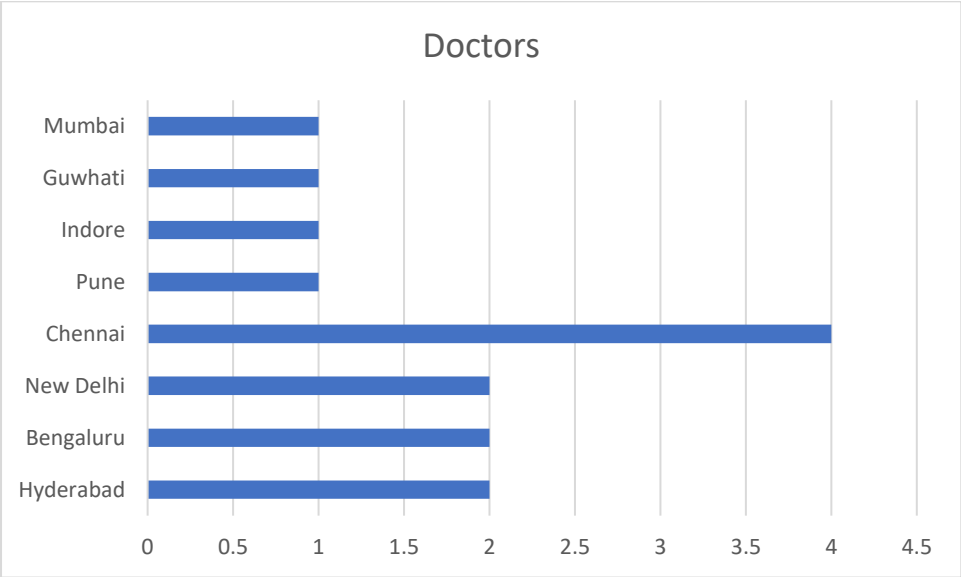
City	Total Occupants
Bengaluru	782
Chennai	808
Hyderabad	464
Indore	45
Mumbai	382
New Delhi	147
Pune	10
Guwahati	219

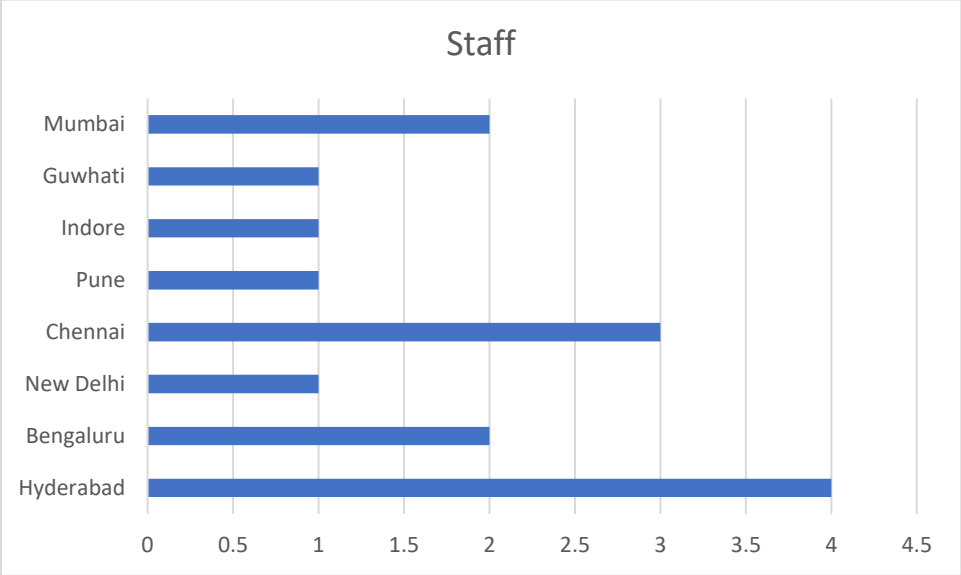


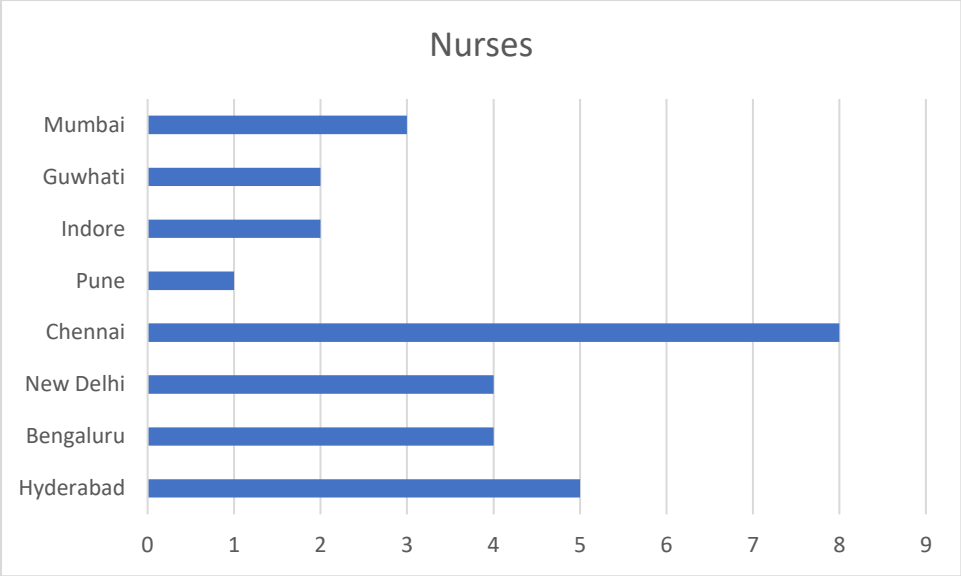


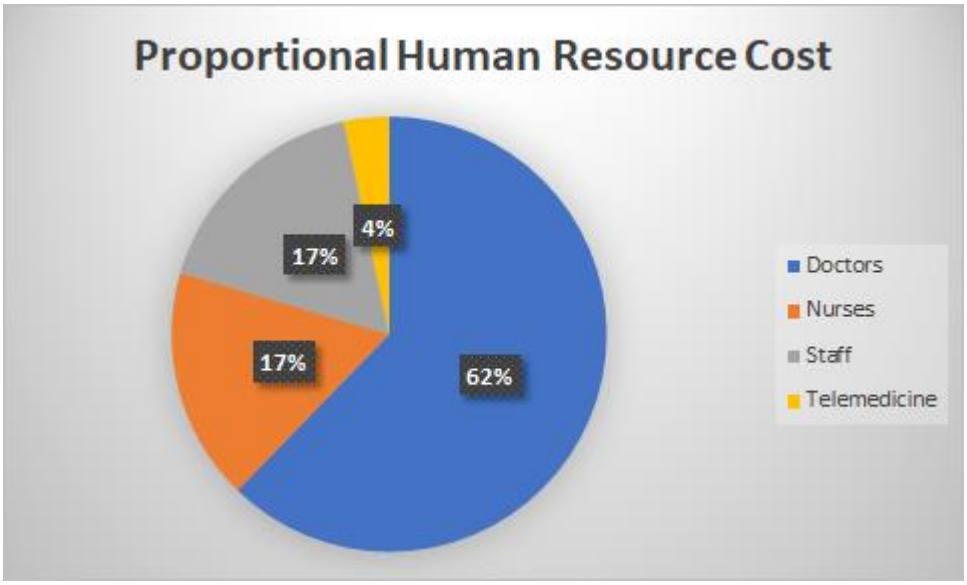
Interpretation: The above representation depicts that in Chennai and Bengaluru the number of patients seeking isolation has been the highest. Hyderabad, Mumbai, and Guwahati also showed a considerable percentage of patients utilising the Apollo Kavach Stay-i programme. The programme showed the least engagement in Indore, New Delhi, and Pune.

ANALYSIS 5: Cost of Human Resource & Manpower Utilization





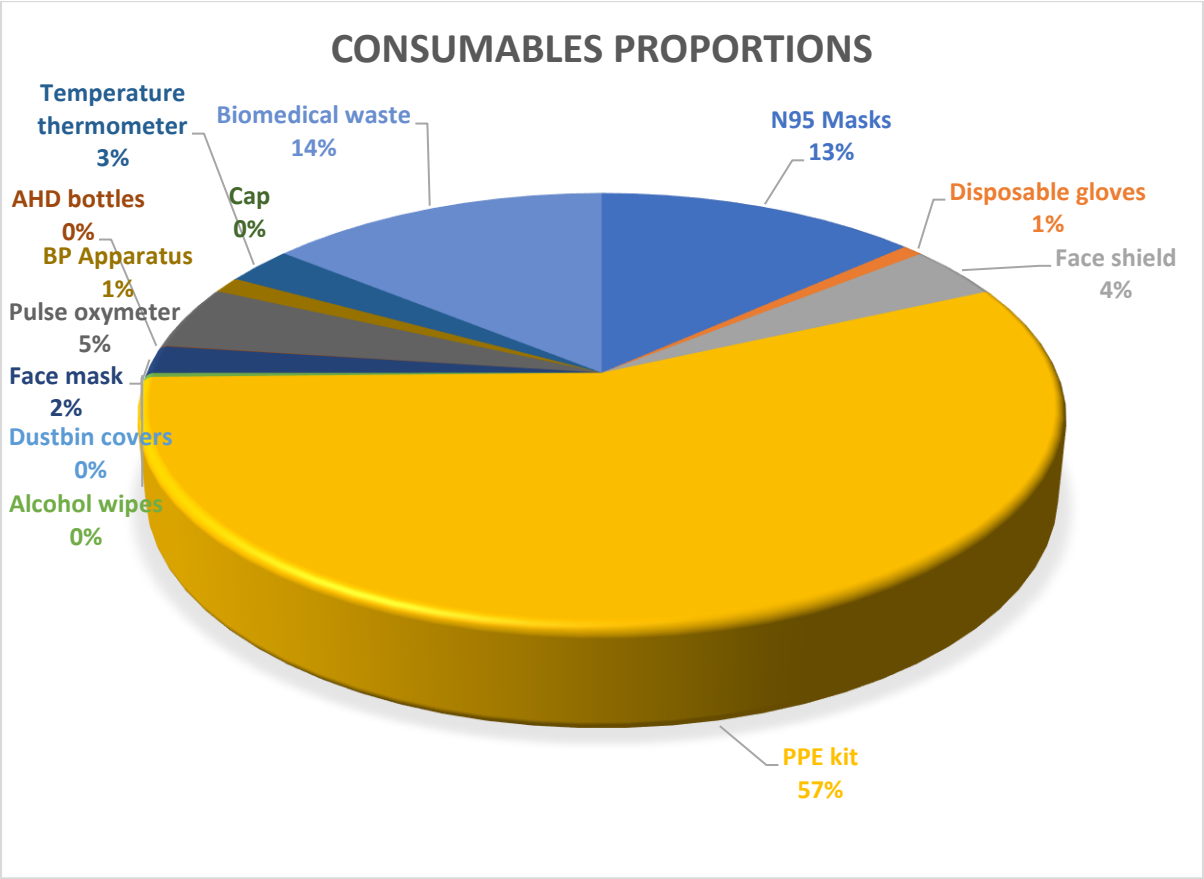




Interpretation: A good example of human resource optimization in the city-wise count of Doctors, Staff and Nurses is displayed by Apollo Project Kavach. With a count of 1 doctor and 2 nurses per isolation facility helped managing the medical supervision services and providing optimal care with it.

Overall, through the pie chart it is depicted that the maximum expenditure was on the doctors followed by nurses and staff. The cost of Telemedicine has been the least.

ANALYSIS 6: Consumable's utilization



Interpretation: The Highest proportion allotted to the consumables was for PPEs which are essential for the medical staff on duty for interacting with the patients under isolation followed by the N95 Masks. This depicts the level of care provided for the human resources under the Apollo Kavach so that optimal results without absentees can be managed and the continual care can be provided.

Critical Analysis

Analysis 1- As per the City wise occupancy with the monthly trend of COVID 19 Pandemic Wave 2 in Summer 2021; The Project Kavach had a delayed start which caused the provision of the facilities to reach late in the mid/ peak time of the wave. There may be certain reasons to it including time lapsed in forming contracts with hotel facilities or forming memorandum of understandings with the corporates.

The utilization was sub-par when compared to the number of beds expanded using the hotel facilities. Only facilities in cities like Chennai, Hyderabad and Bengaluru were able to maintain a uniform trend of occupancy whereas even metro city like New Delhi suffered bitterly even in maintaining the utilization of beds. There may be factors which may have resulted into it, such as underperforming hotel services which made the contracts difficult to maintain due to poor customer satisfaction or central cause at the end of the Apollo 24I7 call centre which may be insufficient in tracking all the requests.

Analysis 2- The days stayed by a patient varied from 24 days to even 1 day. This may be contributed highly by the poor customer satisfaction on the hotel's end which may have forced many patients to have early checkouts.

The isolation period as per then ICMR guidelines for 2021 was of 10 days from the day of RT-PCR with at least 3 consecutive afebrile days before discharge. But the average length of days was lower than 10 in every city. Only two cities Hyderabad and Mumbai were able to present approximately 9 days on average stayed in the facility. Whereas Indore performed the worst in terms of average days stayed with approximately 5 days stayed on average by the patients.

During this period multiple employers required the daily status reports of their employees as occupants under the Apollo Kavach project. But initially the data always came in with a higher number of discrepancies which affected the time management as the immediate queries must be resolved for the employers with utmost urgency. The cause was the lack of coordination between the hotel facilities in a city with the Apollo's Supervisor for the city. This issue was resolved only after intervention and daily queries raised by Apollo Hospitals Hyderabad; which resulted in a streamlined flow of data input from cities and hotel facilities and smoother output and communication with the employers regarding the status of the employees; thus, lesser data discrepancies.

Analysis 3- Average medical fees generated was the lowest in the city of Indore due to its direct relation with the average days stayed in the facility. The highest average came from the cities of Hyderabad and Mumbai but specifically for the room type of Single occupancy. Chennai showed a well-balanced average with both the room types Sharing and single generated a comparable medical fees average which in turn results in a higher total medical fees generation.

Analysis 4- The proportion of utilization rates varied vastly from city to city. The basic reason being the vast differences between the population size and the level of commercial development of the cities. Cities such as Chennai and Mumbai saw a greater footfall of patients whereas the cities like Indore and Pune cannot maintain the utilization proportion. Exceptionally, New Delhi, being the capital city and one of the most commercially active cities in India also lacked optimization proportion.

Analysis 5- The cost of human resource had been the one of the biggest expenditures when compared to the other factors. But without the proper aid of medical staff (doctors and nurses) and the non-medical staff the project can never accomplish the basic objective- The provision of medical supervision to the patients. The added proportion of teleconsultation might have shown the advantage of providing subsidiary support in the time of isolation for the patients as Apollo 24/7 also provides in for regular counselling and assessment of the psychological state of the patients in isolation especially the ones in single occupancy room type.

Analysis 6- The consumables utilized withing the period of approximately 2 months included all the personal protective equipment necessary for the medical and the hotel facility staff for their safety. All the costs and supplies were borne by Apollo Hospitals to ensure the best of supply chain management for such equipment with the best possible quality and ample quantity.

Every day, 3 PPEs with 3 N95 masks and 3 face shields were provided to the medical staff at the beginning of the day's medical examination rounds. With that the Antiseptic hand rubs and alcohol swabs were also made available for sanitizing. Every facility was provided with one infrared thermometer and 1 blood pressure apparatus or sphygmomanometer as well as a pulse oximeter for vitals of every occupant utilizing the facility. This ensured a proper medical supervision for the patients and having the correct surveillance to act accordingly, also facilitating the evaluation for the number of days required to stay isolated and discharge.

Recommendations

a. Being a new and innovative project from a hospital the initiation time for the project may vary from city to city as per the COVID-19 case findings. Thus, there must be a channel to incorporate more corporates- new and old through Memorandum of Understanding or using a addendum for already incorporated corporates will save some time.
b. For outreach of the programme to public was minimal; we saw maximum of the patients coming in from already tied up corporates. The Apollo 24I7 team must be able utilize the digital marketing platform for the masses and setting up strong channel for better search engine optimization which may include-
    i. Introducing indexing
    ii. Improving snippets in search titles
    iii. Adding structured markup for data
c. The advised time for isolation by ICMR is 10 days from the day of contact or Positive RT-PCR report and discharged only with 3 consecutive days of afebrile condition. But the patients were discharges ranging from 1 day to 22 days. The lesser the day under isolation maximizes the risk of spreading and contracting COVID-19 disease. Therefore, a proper orientation must be provided to the patients/ guests under isolation so that they complete the minimum number of days as in the guidelines of ICMR.
d. There must be availability of a feedback mechanism at the central operations to get details of services and facilities provided to the patients upon discharge. This will ensure the better performance if taken into concern in terms of Quality improvement and Patient care. As currently no feedback is taken and analysed within the stay facilities which came out to be the biggest reason of patients not willing to stay longer due to lack of services up to the general benchmark.
e. Proper selection of candidates for the post of City-supervisors must be made, this will ensure a proper inflow and outflow of data from the hotel to the central operations and vice-versa, respectively. It was often observed that the patients seeking isolation must wait hours before receiving clearance for isolation from the facilities which increased the risk of contracting the virus for their families and friends.

Conclusion

Even though the project is in its adolescence stage it came up as a good example of Expanding operations, Optimizing resources and Profit maximization. The inclusion of a new project under the lead of Apollo Hospitals Enterprise Limited operated from the Apollo Hospitals, Apollo Health City Jubilee Hills, Hyderabad has opened of scope for further expansion of operations for medical facilities and services by utilizing already available infrastructure in the corporate field. The way in which the available provisions from the hospitals are used and provided during pandemics adds to the quality of the services provided by the Apollo hospitals. This also included the count of manpower brought in using contract basis employment and providing them with accommodation and other necessities on the facilities itself shows the importance given to the human resources from Apollo Hospitals. The revenue generated within this period was approximately Rs. 9,93,57,250.00 which in turn upon taking out the costs of hotel expenses (Rs. 6,66,44,000.00), Consumables (Rs. 25,51,478.00) and the cost of human resources (Rs. 62,55,000.00) returned the organization with an approximate profit of Rs. 2,39,06,772.00 which amounts to 32% of the revenue generated; this can be taken up as a profit maximization example for the project.

With the taking up of various improvement suggestions the operational flow can be smoothened and henceforth the optimization in terms of time, efforts and revenues can furthered be enhanced.

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