INTERNSHIP TRAINING

AT

AKHIL SYSTEMS PVT. LTD.

ON

PATIENT SATISFACTION SURVEY USING TELE CONSULTATION SERVICES IN PROSPECT OF COVID-19

BY

RITVIK CHHABRA

ENROLLMENT NO- PG/19/106

UNDER THE GUIDANCE OF

Dr. B.S SINGH

PGDM (HOSPITAL AND HEALTH MANAGEMENT)

2019-21

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH

NEW DELHI

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The certificate is awarded to

Ritvik Chhabra

In recognition of having successfully completed his internship in the department of

Implementation and has successfully completed his Project on

"Patient Satisfaction survey using Tele Consultation Services in prospect of covid-19"

On June, 2021

Akhil Systems Pvt. Ltd.

He comes across as a committed, sincere & diligent person who has

a strong drive & zeal for learning.

We wish him all the best for future endeavours.

Ankita

Training & Development

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ritvik Chhabra** student of PGDM (Hospital & Health Management) from International Institute of Health Management Research New Delhi has undergone internship training at **Akhil Systems Pvt. Ltd.** from **March** to **May, 2021**.

The Candidate has successfully carried out the study designated to his during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements.
I wish him all success in all his future endeavours.

Dr. B.S Singh
Mentor
Associate Professor
IIHMR, New Delhi

Certificate of Approval

The following dissertation titled **"Patient Satisfaction survey using Tele Consultation Services in prospect of covid-19"** at **"Akhil Systems Pvt. Ltd."** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for an award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Signature

Certificate from Dissertation Advisory Committee

This is to certify that **Mr. Ritvik Chhabra**, a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. He is submitting this dissertation titled "**Patient Satisfaction survey using Tele Consultation Services in prospect of covid-19**" at "**Akhil Systems Pvt. Ltd.**" in partial fulfilment of the requirements for the award of the **PGDM (Hospital & Health Management).**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Institute Mentor: **Dr. B.S Singh**
Designation: **Associate Professor**
Organization: **IIHMR, Delhi**

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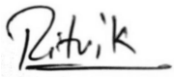
Signature:

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH

NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "**Patient Satisfaction survey using Tele Consultation Services in prospect of covid-19"** and submitted by **Ritvik Chhabra**, Enrolment No. **PG/19/106**. Under the supervision of **Dr. B.S Singh, Executive quality** for award of PGDM (Hospital & Health Management) of the Institute carried out during the period from **1st March to 31st May** 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 institutions of higher learning.

Name: **Ritvik Chhabra** Signature: 

FEEDBACK FORM

Name of the student:	**Ritvik Chhabra**
Dissertation Organization:	**Akhil Systems Pvt. Ltd.**
Area of Dissertation:	**Implementation**
Attendance:	**Complete 3 months**
Objectives achieved:	**Yes**
Deliverables:	**Mobile App Deployment and HIS Implementation**
Strengths:	**Good Communication and Presentation skill, Leadership, Hardworking, Keen to learn**

Suggestion for Improvement:
Ritvik has keen interest in learning new things. Takes Initiative in learning. Can improve more on the documentation part.

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):
Institute has trained the students well. However, can improve on the practical exposures of students especially considering the Healthcare related operations in hospitals in case of healthcare IT students too.

Signature of Organization Mentor (Dissertation)

Date: June, 2021

Place: Delhi

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Project Overview

Project Title: Patient Satisfaction survey using Tele Consultation Services in prospect of covid-19

Abstract

This coronavirus is a newly-found species of virus that has not been previously recognized. The scientific name of the virus is Severe-Acute-Respiratory-Syndrome-Coronavirus-2 (SARS-CoV-2). The index case of the coronavirus was found in Wuhan city of China on December 8, 2019, and it spread to more than 177 countries across the world within a span of only 3 months. On 11 March in year 2020, the WHO had announced the rapidly spread corona virus is a pandemic and named it as "COVID-19 VIRUS". As of 22nd May, 2021 covid 19 affects 16.6 crore individuals globally, with highest number of cases in America and Europe. The total number of deaths already exceeds 34.5 lacs during the second wave and it is expected to increase as the virus spreads. The case fatality rate of covid 19 is 6.12% worldwide, older adults and patients with co-morbidities are likely to have severe infection and at risk of dying. So those who are at highest risk of covid-19 infection are those who survived with non-communicable disease for longer times, mostly are the elder people.

Teleconsultation is a beneficial means in view of the current pandemic conditions where a pandemic is proclaimed and the emotions like anxiety and fear can engulf people as well as our health systems is also seen struggling to get by with an uncontrolled and sudden rise in demand. Lack of suitable mind set and planning, care measures and clinical services causes the risk of collapse which is prompted by queries accumulation that can be assisted by virtual means.

In many medical conditions like general check-up or some diagnosis related consultation the referral process remains difficult. Mobile phone apps are designed unambiguously to smooth out the referral process with the use of structured models along with the integration of some feature specific specialties. The patients are more likely getting interested with the mobile application to consult with a doctor nowadays.

The intention of this study is to assess the patient satisfaction and their feedback regarding teleconsultation using Google form during the ongoing Covid 19 pandemic. The study was conducted in few reputed hospitals in Delhi NCR. Initially tele-communication media was used to deliver tele service and their satisfaction level was gauged using the google form about the satisfaction and compatibility in various aspects related to teleconsultation service.

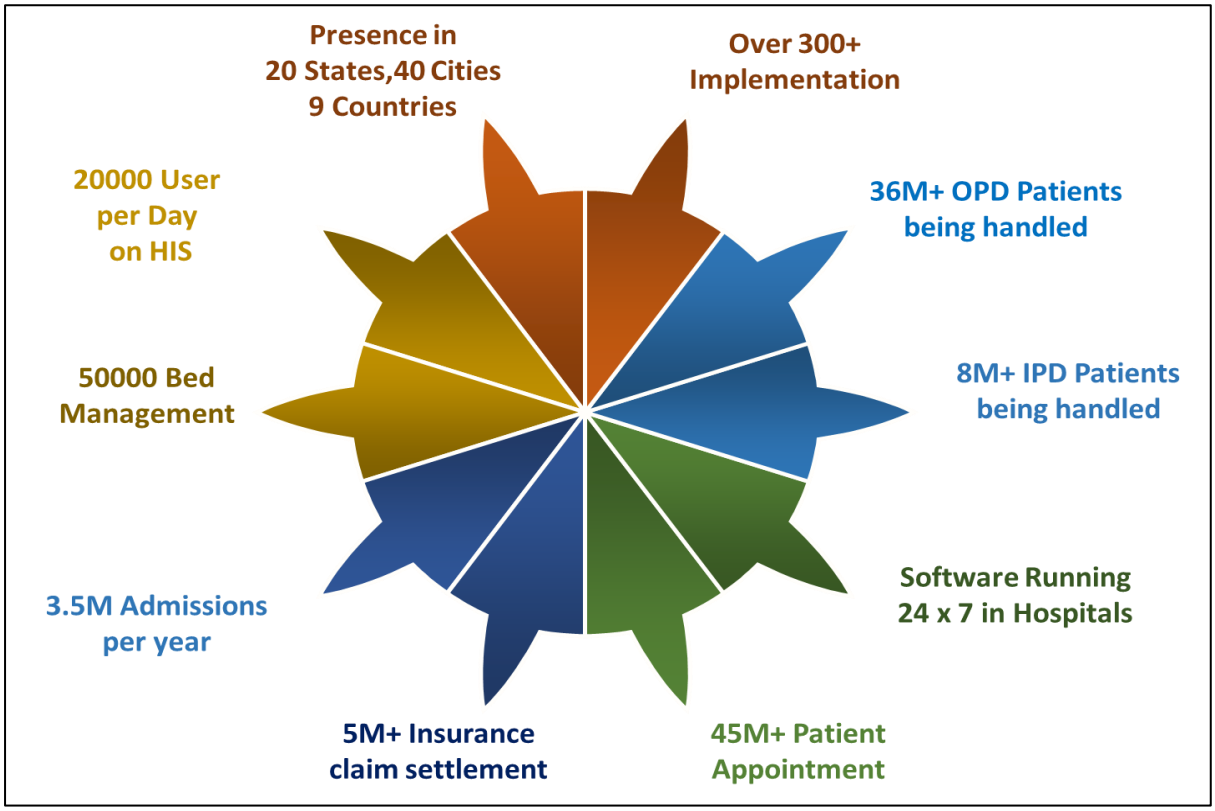
About the Organization

1. Company Introduction

Akhil Systems Pvt. Ltd is one of the pioneer hospital information system (HIS/EMR) organization with more than 26 years of experience in the single domain of healthcare. With such a vast experience in the single domain, we are proud to believe that we have specialized in delivering total health solutions for Hospitals, Medical Colleges, Diagnostics Centre, Pharmacy Chains and clinics.

Since its inception in 1994, Akhil Systems has become industry leader for offering comprehensive and cost-effective healthcare software solutions by automating needs of clinical, administrative and financial areas in paperless environment.

With hundreds of successful implementations in India and overseas. Our presence can be felt in Dubai, Myanmar, Bahrain, Qatar, Philippines, Bangladesh and many more countries.



1.1 Our Vision

We intend to provide the best services to our clients and want to achieve worldwide excellence in Healthcare IT industry by providing our world-class Healthcare ERP solutions.

1.2 Our Mission

To develop, innovate and provide robust Healthcare ERP solutions using latest technologies worldwide as per the client's vision with quick implementation and affordable cost.

1.3 Journey So Far

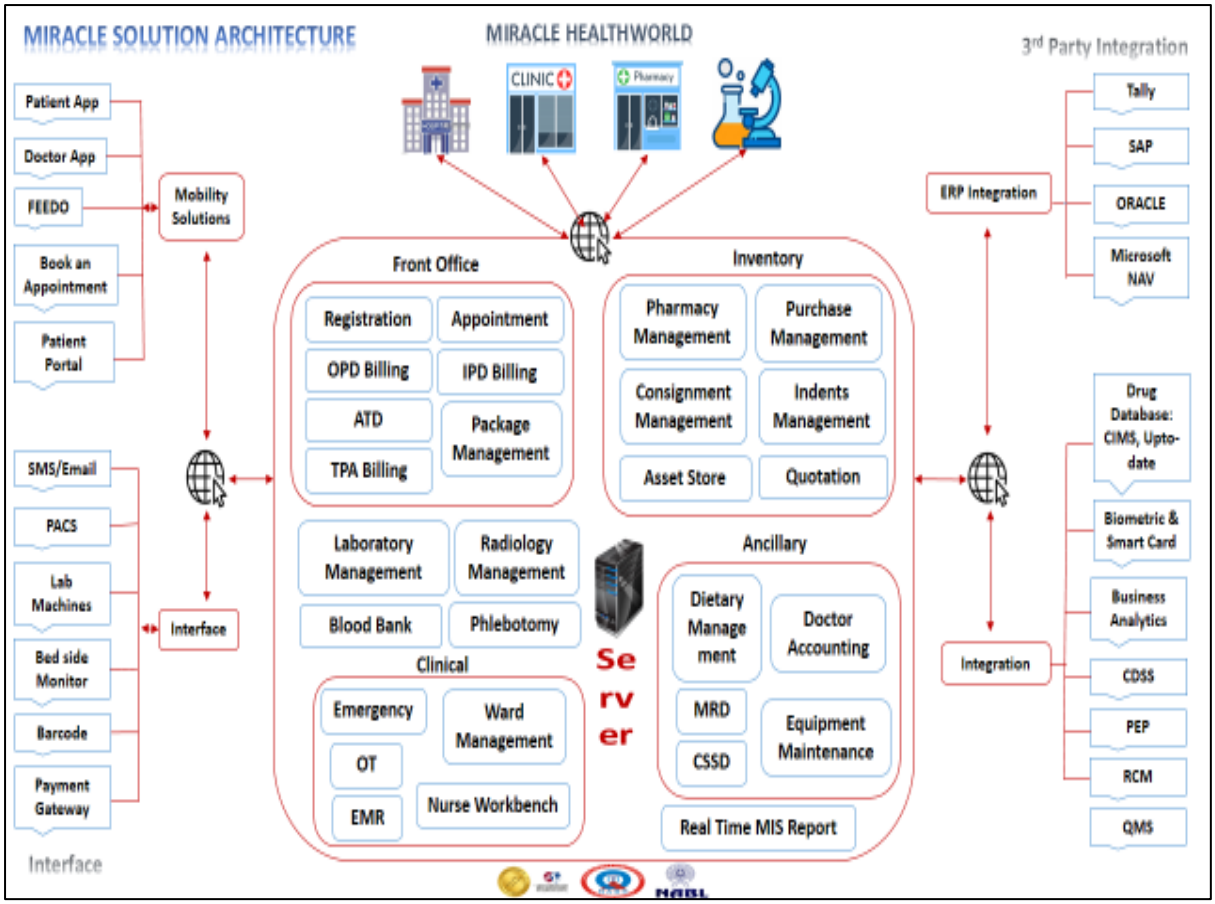
- Highest No. of Successful HIS installations in India
- Provided solution from 20 Beds to 1800 Beds Hospital
- Software Running 24 x 7 in Hospitals for last 25 years
- Recognized as 20 Most Promising Solution for Healthcare 2016 by Silicon India Magazine
- Awarded "Best HIS & HMIS Provider of the Year" at 4th Annual e-Health Healthcare Leaders Award on 12th March, 2015 at New Delhi
- Recognized as "Company of the Year'14 – Healthcare HIS" by CIO Review Magazine
- Winner of "Best HIS and HIMS Provider of the Year – 2013" by e-India Award

1.4 Presence in Worldwide

2. Miracle HIS- Overview

Akhil Systems MIRACLE HIS is a comprehensive and complete solution designed that automates the clinical and administrative functions and enables the healthcare providers to improve their operational effectiveness, consequently reducing costs and medical errors, while enhancing quality of care. Our solution is designed to meet requirements of hospital of all sizes, medical colleges and nursing homes.

We understand the unique workflows and information needs of various care types, our product has been designed with modular architecture to cater to the requirements of the various departments and specialties of the hospital such as OPD, IPD, Emergency Care, Nursing Care, Pharmacy, Laboratory, Radiology, Inventory Management, Operation Theatre and many more.



2.1 Miracle Product Line

For Hospitals

- **Miracle HIS Enterprise** (>300 Beds)
- **Miracle HIS Premium** (100-300 Beds)
- **Miracle HIS Xpress** (<100 Beds)
- **Miracle HIS on Cloud**
- **Medical College**

For Diagnostic

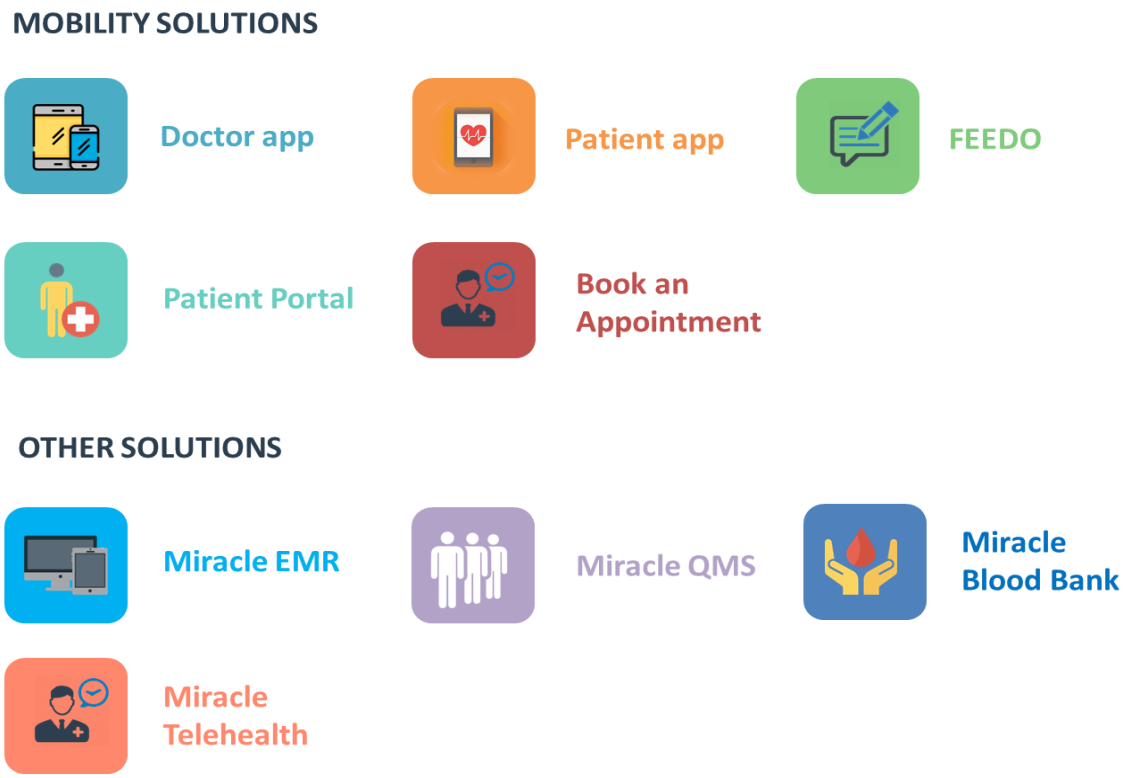
- **Laboratory Information system**
- **Radiology Information system**

For Clinic

- **Miracle Clinic**

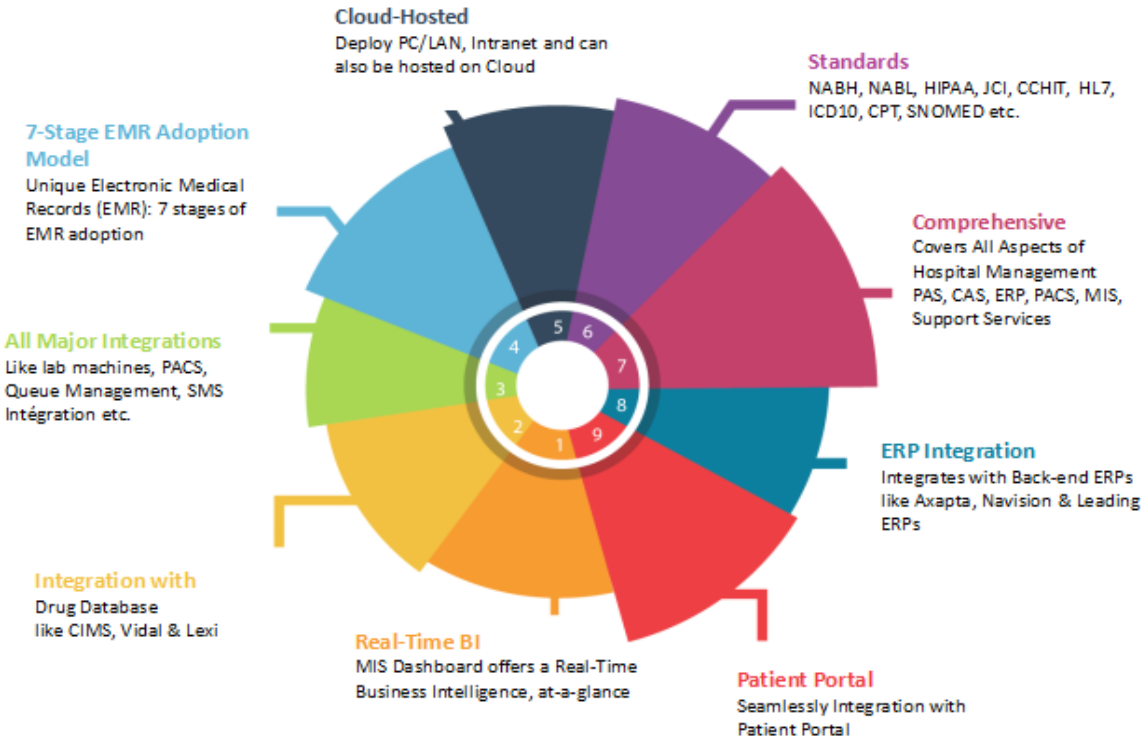
For Pharmacy

- **Miracle Pharmacy**



2.2 Miracle HIS Benefits

- Customized solution with total support for smooth running by medical & software specialists with over a decade experience in healthcare IT.
- Eliminates redundant paper work & maintenance of records
- Builds efficiency & productivity with better work flow management
- Simple to learn & operate by non-computer background users
- Facilitates generation of accurate billing & revenue control
- Centralized database management storage
- Boosts hospital revenues— follow up revenue generation stream
- Improved bed utilization stream
- Maximizes resource utilization across all hospital departments

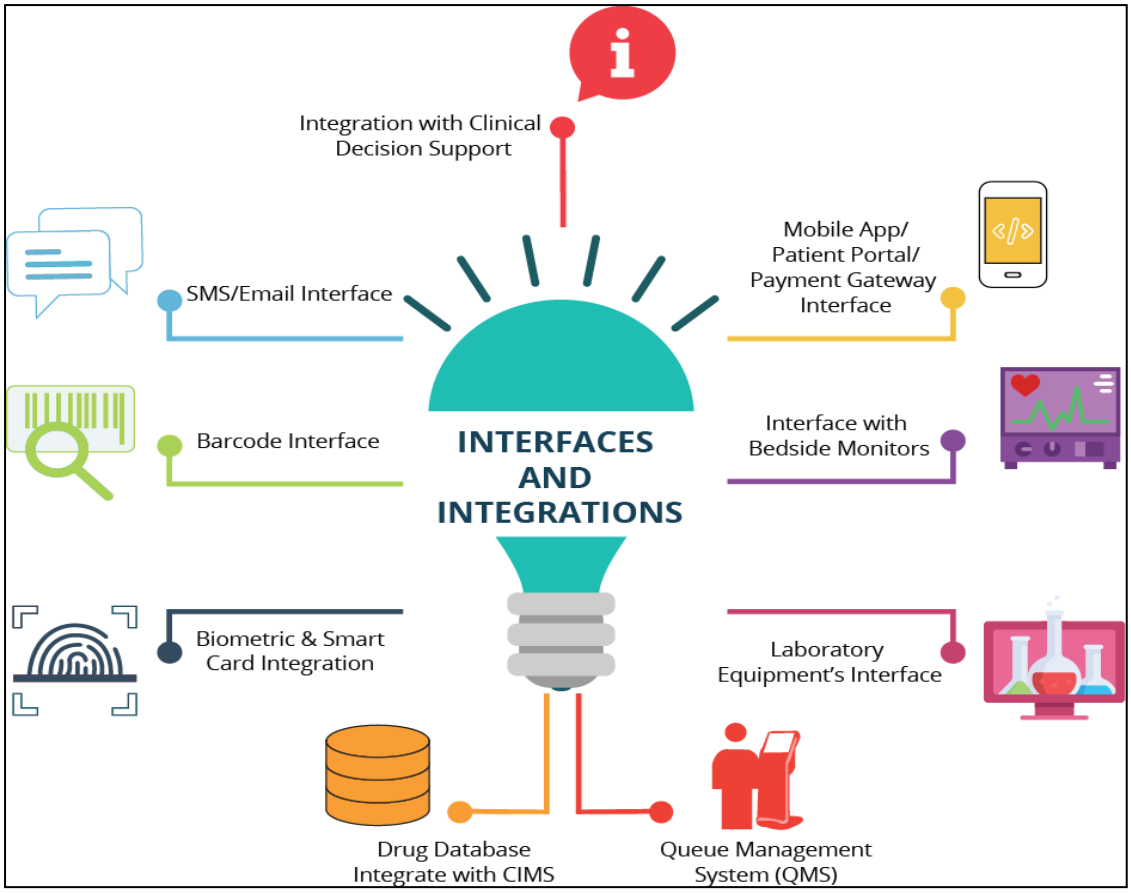


- Improves hospital administration through streamlining workflow operations
- Rapid deployment and quick return on investment
- Multi-site reporting and dashboards for management
- Easy adoption of technology, reduces upfront investments

3. Interface with Miracle HIS

Our Akhil his is enabled for the following interfaces required by the hospital and offered to the hospital as per their requirements on chargeable basis:

- Interface with Laboratory Equipment
- Interface with Bar Code
- Interface with PACS
- Interface with SMS Technology
- Interface with Drug Database



Services Offered by Akhil Systems

1. Emergency

An emergency department (ED), also known as an accident & emergency department (A&E), emergency room (ER), emergency ward (EW) or casualty department, is a medical treatment facility specializing in emergency medicine, the acute care of patients who present without prior appointment; either by their own means or by that of an ambulance. The emergency department is usually found in a hospital or other primary care centre. Due to the unplanned nature of patient attendance, the department must provide initial treatment for a broad spectrum of illnesses and injuries, some of which may be life-threatening and require immediate attention. In some countries, emergency departments have become important entry points for those without other means of access to medical care.

2. Registration

Maintaining record of all the patients is a troublesome and time-consuming task. These days any hospital cannot depend on paper to maintain name record and hence, it requires an electronic solution to reduce the effort. Miracle HIS provide an easy way out for maintaining and managing name records of the all the patients. Registering patient name along with other

personal information helps in organizing a manageable database. This database is easily accessible and could later be used by the provider, front desk, administrator or any authorized personnel. Hospital could use this data for analytic purpose as well. Miracle HIS is packed with multiple modules and most of these modules are interconnected. Registering patients using Miracle HIS is simple and allows user to omit human errors. Any correction or modification in the patient's record is one-minute task. User may need to enter remarks every time they make any changes. Miracle HIS also provide an option to add notes in the registration module.

Patient Registration – The patients visiting in the hospital are categorized into two types:

1. General Patients
2. External patients

3. Appointment

Time is the most precious entity that humans have been gifted by nature. Utilizing it judiciously is challenging. To maintain a smooth flow of work and work environment we assign time window to each patient where he/she could interact with the doctor or go through the treatment procedure. Managing large number of appointments and keeping a record of doctor's availability is intricate task. Miracle HIS has made this process easy for the operators. Using 'Appointment' module of Miracle HIS, operator could easy maintain a database of doctors, their time schedule, patient's arrival details and other necessary details of the patient. Through this module operator can make an appointment for patients with their respective doctor. Appointments could be booked over telephone, over hospital's website and online portals. A patient could simply walk-in for an appointment too. This module saves a lot of time and avoids all the time related conflicts. Operator can also keep a check on all the confirmed and unconfirmed appointments. Operator can easily manage all the unpaid appointment schedules.

4. Billing

Generating good revenue is a key process that leads to making of a successful business. Collecting money from the clients and keeping a record of each transaction is an intricate task. It involves a great deal of patience and good maths. One must be very careful before charging their clients (patients in this case). One wrong transaction could disgrace the reputation of the institution. Generating manual bills is a time-consuming task. One could possibly make errors in calculation or in writing the names of the medical services provided. One could make errors in calculating taxes manually. No matter whatever the reason is, one wrong bill would ultimately lead to patient's dissatisfaction. This module is used to perform the monetary events in the hospital, including Outpatient and Inpatient billing.

5. ATD – Admission, Transfer & Discharge

Used in health care, an ADT system is usually the foundation for other types of health care information systems because it holds valuable patient information such as a medical record number, age, name, and contact information. Using the ADT system, patient information can be shared, when appropriate, with other health care facilities and systems. ADT systems can also be used as an alert system upon a patient's admission. This can be helpful if a patient has had a history of an infectious disease or heart ailments. For example, when admitted, the ADT system may alert the admitting staff that the patient needs to be in an isolation room or on a cardiac floor. This Module enables advance Booking of Beds, Surgery & other Facilities in a hospital. The system maintains status of occupied & vacant beds.

6. EMR

An EMR (Electronic Medical Record) is a digital version of a paper chart in a clinician's office. It contains the medical and treatment history of the patients. An EMR allows a clinician to track data over time, easily identify which patients are due for preventative screenings, check how patients are doing on certain parameters such as blood pressure readings or vaccines and monitor and improve overall quality of care within the practice. An EMR is said to make the process of patient record-keeping easier, more accurate and comprehensive and more efficient. Doctors use specialized software, which allows them to enter information electronically and makes and patient's complete history available immediately. Physicians can use a desktop, laptop or electronic clipboard to navigate through patient's charts and record notes.

7. LIS – Laboratory Information System

This module provides multi-site, multi-facility specimen/sample tracking and lab support, accurate, up-to-the-minute patient data and charge information. Automatic generation of collection lists, labels and worksheets, instant comparison and statistical analysis of test results, on-line patient inquiries, reports, and summaries, integrated inventory management and maintenance scheduling for laboratory instruments/equipment, Lab Register Maintenance, Equipment's Interface for capturing of result etc.

8. RIS – Radiology Information System

A Radiology Information System (RIS) is a software suite for managing medical imagery and associated data. RIS in HIS is especially useful for managing radiological records and associated data in multiple locations and is often used in conjunction with a picture archiving and communication system to manage work flow and billing. RIS can track a patient's entire workflow within the radiology department. Images and reports can be added to and retrieved from electronic medical records (EMRs) and viewed by authorized persons.

9. Ward Management

Hospitals consist of departments, traditionally called wards, especially when they have beds for inpatients, when they are sometimes also called inpatient wards. Hospitals may have acute services such as an emergency department or specialist trauma centre, burn unit, surgery, or urgent care. These may then be backed up by more specialist units. In addition, there is the department of nursing, often headed by a chief nursing officer or director of nursing. This department is responsible for the administration of professional nursing practice, research, and policy for the hospital. Nursing permeates every part of a hospital. Many units or wards have both a nursing and a medical director that serve as administrators for their respective disciplines within that specialty.

10. Inventory

A hospital warehouse is a department in a hospital where medical supplies are stored. Such supplies include intravenous (IV) solutions and tubing, first aid products (band aids, wound dressings, gauze, etc.), protective equipment (gloves, gowns, masks, etc.), personal care products/toiletries (wash basins, bedpans, diapers, shampoo, deodorant, toothpaste, toothbrushes, patient belonging bags, drinking cups, etc.), feeding tubes, Foley catheters, respiratory supplies and orthopaedic supplies (crutches, arm slings, splints, etc.). Items in the warehouse may be distributed to various departments within the hospital (such as the emergency room, operating room, intensive-care unit, etc.), through a centralized requisition system which determines what supplies are needed and the amount to each department. For any modern-day hospital, it is next to impossible to keep a record of all the supplies on paper, hence, Inventory module comes in use.

Inventory module covers the functions of Purchase, Stock & Issue of Drug items, Stock Accounting, Inventory Control functions. The Stock Valuation is based on First-in-First-Out system. Inventory module keeps a record of all the purchase orders, availability and the cost of all the previously ordered items. A user can make an order directly to a vendor or make a

request to his senior for his approval first. Inventory module allows only authorized personnel to make an order or place any request. Inventory module maintains a dashboard for a quick preview at all the necessary in and out of supplies.

11. Operations Theatre

An operating theatre (also known as an operating room, operating suite, and operation theatre or operation suite) is a facility within a hospital where surgical operations are carried out in a sterile environment. A hospital must ensure that their Operation Theatre(s) or OT(s) are available to be used by any other patient. A hospital also needs to keep a check on every admitted patient's status. To handle all these issues, Miracle© HIS provide OT module to manage all the OTs and their availability in the hospital. This module allows capturing, storing and accessing the patient's operative details and scheduling against different OT's, throughout the hospital facilities, including the steps of OT booking, confirmation, check in, surgery posting and many more for the inpatient as well for the outpatient and emergency patient.

12. MRD – Medical Records Department

The terms medical record, health record, and medical chart are used somewhat interchangeably to describe the systematic documentation of a single patient's medical history and care across time within one particular health care provider's jurisdiction. The maintenance of complete and accurate medical records is a requirement of health care providers and is generally enforced as a licensing or certification prerequisite. The terms are used for both the physical folder that exists for each individual patient and for the body of information found therein. These medical reports are maintained and managed by a department within a hospital facility called Medical Report Department or simply MRD. This department is responsible for the record maintenance.

13. Doctor Accounting

Keeping a track of revenue generated and its distribution amongst the employees is much difficult task than it sounds. This module is responsible for keeping and maintaining the doctor's payment status. This module allows user to define the rules of payment. Most of the providers in a facility do not agree to work on fixed salary basis. They will prefer to get some percentage of the revenue generated by the facility as their salary. Some provided may agree to work on fixed salary plus some profit share. Hospital may deduct or add some money into doctor's salary as per business rules every month. This way, managing the salary part of each doctor gets troublesome. Miracle HIS provide an easy way out of this problem. While maintaining 100% privacy and confidentiality, it allows a hospital to manage monetary transactions easily and errorless.

14. Blood Bank

It is an integrated Blood Bank Automated System refers acquisition, storage, validation and circulation of various live data and information electronically regarding blood donation and transfusion service. Multiple blood banks can be managed by a single Organization. This is an effective management tool for individual blood banks and multiple blood banks under a single Organization. The citizen can avail the blood stock availability status at their fingertips through web and integrated SMS and IVRS facility.

15. CSSD

Every day millions of medical procedures are performed utilizing a wide range of medical supplies, instruments, and equipment. These devices are required to be properly cleaned, disinfected and sterilized to ensure a proper working and good point of care for patients as in absence of proper handling, it can compromise the quality of care. Central Sterile Supply Department (CSSD) plays an essential role in order to provide the quality care and support infection control.

16. Dietary Order Management

Dietary management, also known as “foodservice management”, is the practice of providing nutritional options for individuals and groups with diet concerns through supervision of foodservices. Practitioners in dietary management, known as dietary managers, work in hospitals, long-term care facilities, restaurants, school and college cafeterias, correctional facilities, and other foodservice settings, usually implementing meal plans established by a dietitian or nutritionist. They are responsible for supervising the work of other nutrition personnel such as cooks and dietary aides.

17. Linen & Laundry

Hospital Laundry is one of the most important services which if ignored can induce the risk of cross-contamination as well as soil the patient experience. In the hospital industry, the linens are soiled with various types of body fluid like blood, urine, and feces etc. which need to be disinfected and serviced in a proper streamlined flow to ensure the right quality linen and good

point of care for the patients. Linen and Laundry module make sure that linens are processed and cleaned in a streamlined manner so that patient comfortable and satisfactory experience.

18. Insurance Module

Insurance Module is an important module in Hospital Information System. The first purpose or reason to use an insurance module is to maintain the Record of Third-Party Insurance Companies Approval / Rejection.

If any hospital providing cashless servicing to the patients and have tie-up with different types of Insurance companies then is very useful module for the hospital.

Hospital can maintain the all records TPA request, through the module for cashless patients.

At the time Admission, if patient have Insurance policy, then hospital can make admission of the patient in under same Insurance Company (payer / sponsor), hospital/ admission desk has to be check they have tie-up with same Insurance company.

19. Accounts Receivables

The Module is used to manage the amount that has been received from Insurance/ Third Party companies against the invoice raised by the Hospital.

All the refunds, advance collection, settlements are done in this module for the company payer type patient.

20. Financial Integrations

Oracle-RCM & HIS Interface

Oracle-MM & HIS Interface

Tally Integration

SAP Integration

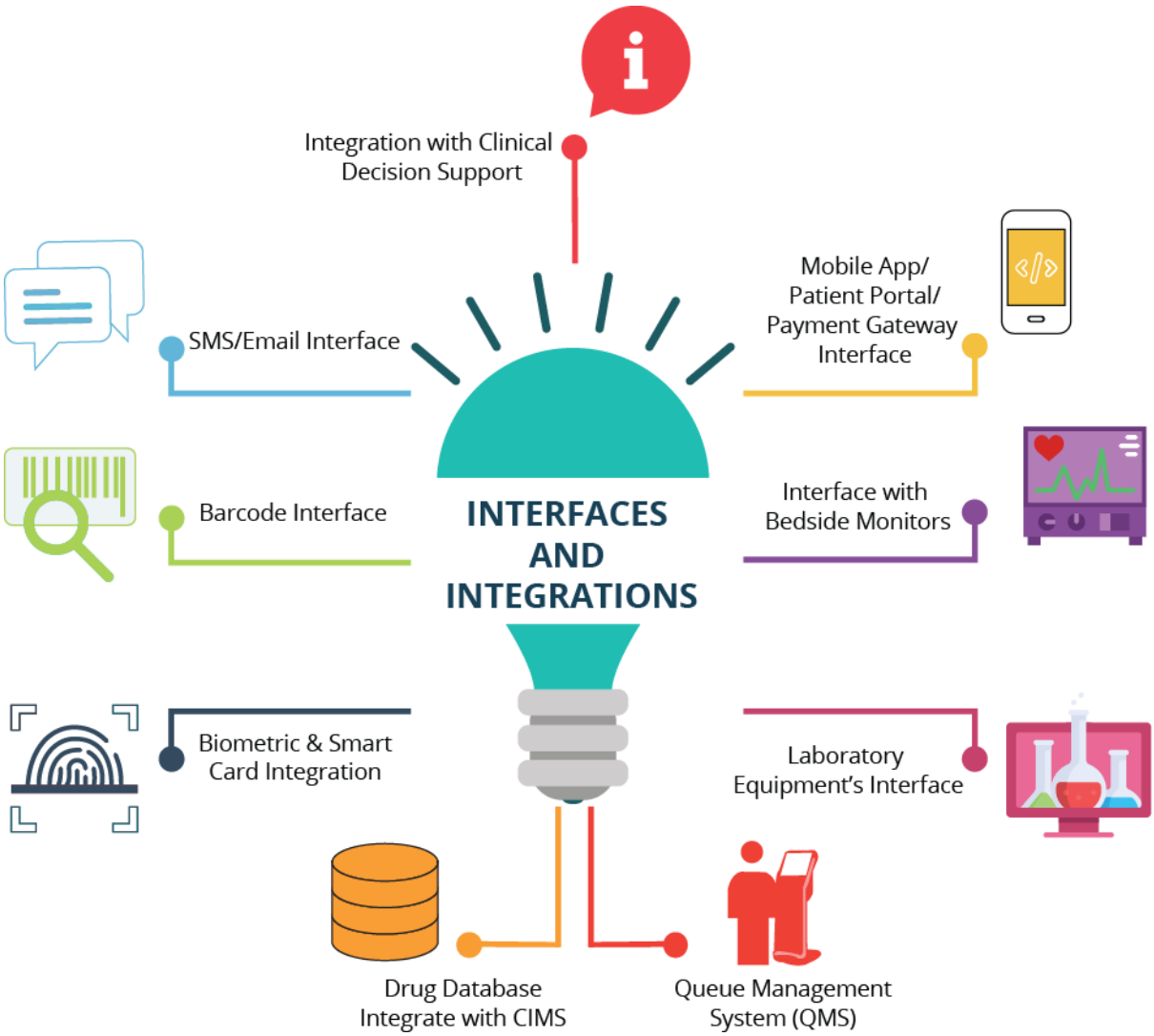
21. Patient Tracking

The Module is used to track the activity of the Patients who have been advised for Surgery, Admission or Radiology Investigations. There is a use of MHC Screen to track the patients came for the Master Health check-up

- An Admission Advise tracking system is put in place for the hospital team for follow up of the patients who have been advised for admission

22. Integrations Offer

The HIS has various innovative solution to offer via Integrations as below:



Lab Machine Bi-directional Interface

Website Patient Portal-HIS Interface

Website Online OP/IP Payment Interface

Website Online Appointment Interface

HIS & Investigation Report SMS interface (Diagnostic with credentials) Reports to get delivered over SMS

PACS(GE) -HIS Interface

Integration with Payment Gateways

Integration with Insurance Gateway

23. Doctor App

The Doctor app is available with multiple features for doctor such as Booking and viewing OP IP Patient, Viewing Vitals, discharge summary, case sheet etc. Recently updated with teleconsultation option.

The Doctor can even view the appointments scheduled for the day or for future dates too and also view its patient under Appointment, IPD Patient and OPD Patient

Doctor can view the following details against the Patient as reflected under the categories:

1. Lab Reports	2. OP Prescription/Discharge Summary
3. Book Appointment	4.Vital
5. Diagnosis	6.Cross Referral

24. Patient App

The Patient App is available for the patients to book appointments, see history of diagnostic reports graphically, and view vital history, Prescriptions etc. Recently updated with teleconsultation option.

The user can explore the following options from the main menu:

1. Book Appointment	2. View Appointment
3. Lab Reports	4. OP Prescription/Discharge Summary
5. Vital	6. Diagnosis

7. Favourite Doctor 8. Feedback

9. Write us 10. Profile

25. Miracle Book an Appointment

Miracle book an appointment is a tool allows patient a full access to manage their hospital appointment. It is integrated with hospital website and provide real time booking for patient

Some features of the Miracle Telehealth solution are as follows:

- Book Appointment (By Specialization/Doctor Name/ Facility/Day/Date)
- Doctor profile for appointment booking
- Appointment booking for both registered or unregistered patient
- Make online payment (Payment gateway integration).

26. Patient Portal

It is integrated with MIRACLE HIS and provide real time information for patient to view their case records, lab reports, appointments and many more.

The user can explore the following options:

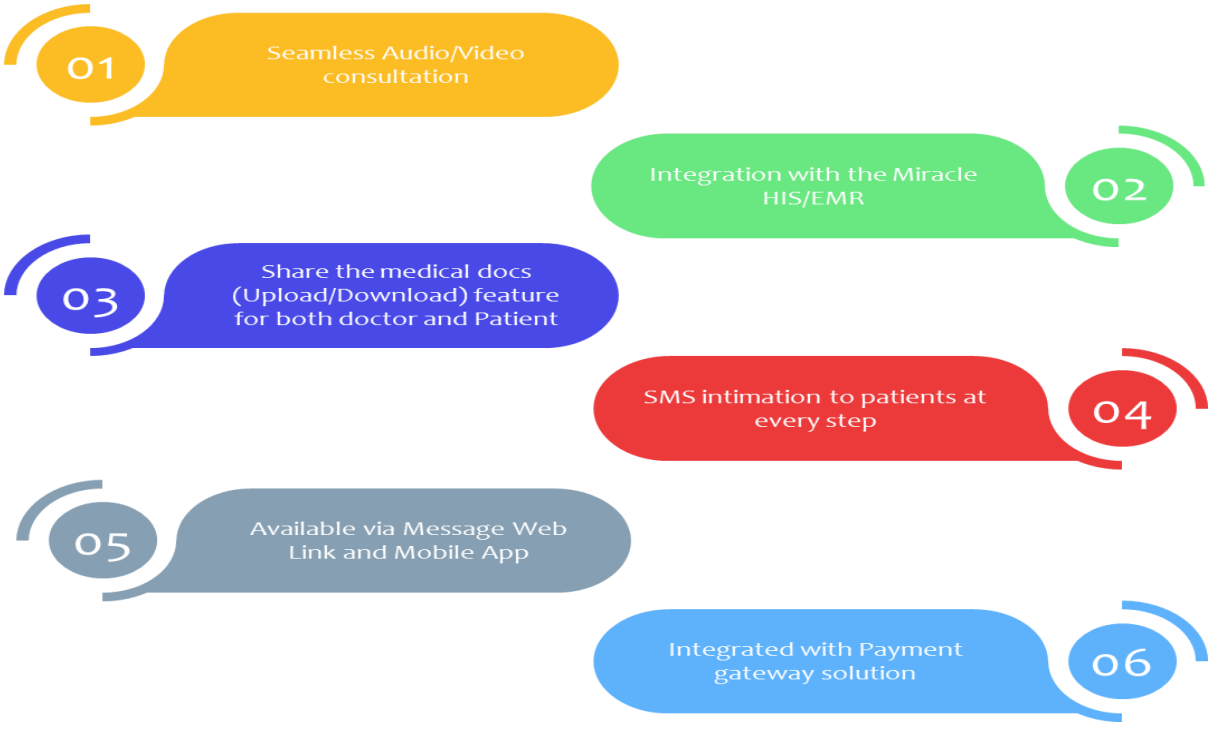
- Take an Appointment (registered patient by logging and un-registered patient using OTP.).
- View Recent Visit and request for follow-up appointment (by logging into portal).
- View lab and RIS reports.
- Give feedback for particular visit.
- Write to hospital for the queries.

- Make online payment (Payment gateway integration).
- View and download discharge summary (for IP patients).
- View doctor timing.
- View patient visited in date range.
- View payment history

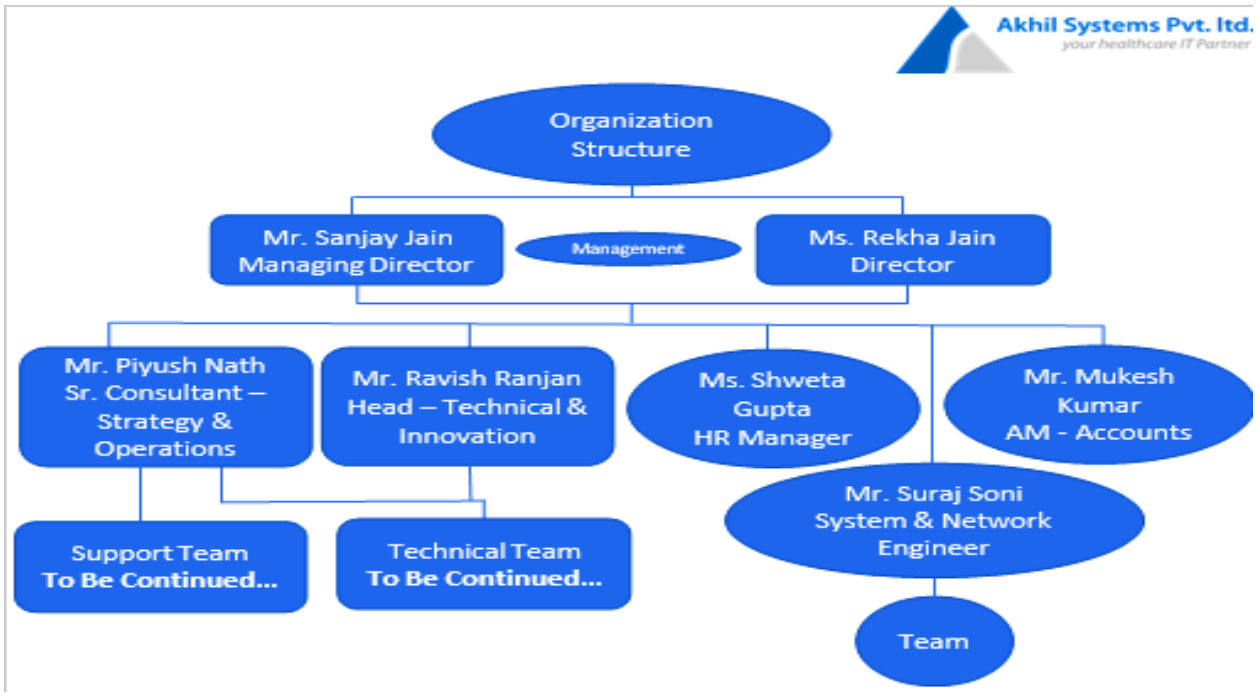
27. Tele-consultation Solution

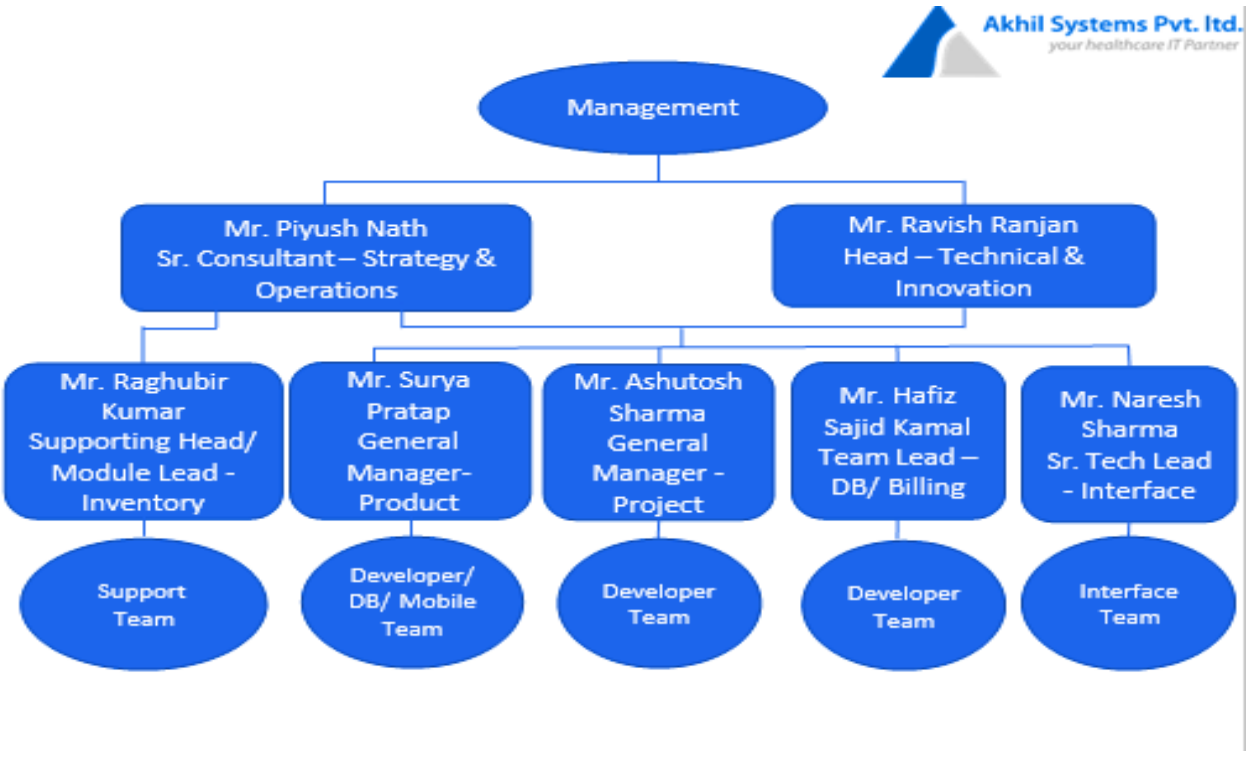
A complete teleconsultation solution which gives freedom to connect providers and patients through virtual channels.

Some features of the Miracle Telehealth solution are as follows:



Organogram


Akhil Systems Pvt. ltd.
your healthcare IT Partner
Organization Structure
Mr. Sanjay Jain
Managing Director
Management
Ms. Rekha Jain
Director
Mr. Piyush Nath
Sr. Consultant – Strategy & Operations
Mr. Ravish Ranjan
Head – Technical & Innovation
Ms. Shweta Gupta
HR Manager
Mr. Mukesh Kumar
AM - Accounts
Mr. Suraj Soni
System & Network Engineer
Support Team
To Be Continued...
Technical Team
To Be Continued...
Team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Mr. Ravish Ranjan
Head – Technical & Innovation
Mr. Raghubir Kumar
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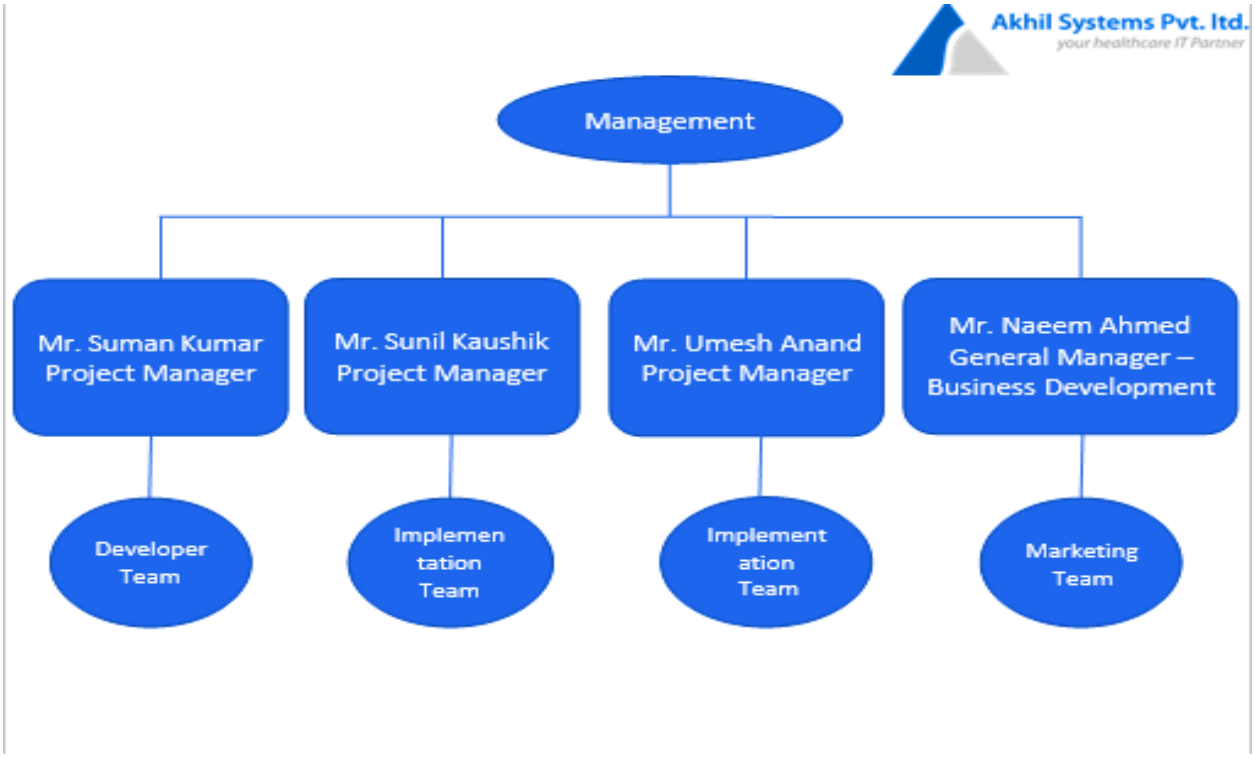
Mr. Surya Pratap
General Manager- Product
Mr. Ashutosh Sharma
General Manager - Project
Mr. Hafiz Sajid Kamal
Team Lead – DB/ Billing
Mr. Naresh Sharma
Sr. Tech Lead - Interface
Support Team
Developer/ DB/ Mobile Team
Developer Team
Developer Team
Interface Team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Project Manager
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Team
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tation
Team
Implement
ation
Team
Marketing
Team

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Ritvik Chhabra

PG/19/106

Introduction

Teleconsultation or Telemedicine is a part of telehealth, it is a comprehensive term that include clinical and non-clinical services remotely like health education, consultations with doctor etc. The teleconsultation service was first introduced for its remote functionality that it is accessible from anywhere in the world and mostly beneficial for people living in villages where there is a discrepancy of healthcare services. Some healthcare providers had also created satellite centres for such neglected areas as their social responsibility whereas some had done same as a part of their business. They tied up with some consultants and let them stayed at their own centres and consult their patients from remote places. This has come out to be beneficial during various pandemics too, when people hesitate to or cannot go to the hospital.

Later with the development of technology, the healthcare facilities also developed. A health tourism states that it is necessary to consult the patient before them reaching directly for diagnosis or for some treatment, this is where concept of teleconsultation plays an important function.

In country like India, people hesitate in consulting a doctor digitally due to many reasons, some of them is that they don't feel comfortable sharing their personal information digitally and some don't even completely believe that they genuinely talk to a doctor over it, they get healed only after the doctor touch them. In India it is been considered that patient can only be cured with doctor reconciling touch. Due to which the teleconsultation concept didn't made much impact in the healthcare system of India, unlike the medical tourism segment. Even in current time also many of the healthcare providers are functioning through satellite centres to give consultation service to the remote villages.

The covid 19 has brought some modernistic concept to the society. Governments around the world has ordered complete lockdown as they found no other option to tackle with the rapidly increasing cases due to which people are no longer allowed to go out of their homes not even for medical services unless there is any emergency. Due to which many susceptible people found it difficult to manage by themselves. Many people are freaking out to get advice from doctors for same which stimulated the need of tele communication to the choice of doctor. At then the healthcare providers started thinking of expansion of their teleconsultation services. The GOI has also made the guidelines after they had talk over with the experts for practicing of teleconsultation. Some of the State governments of India have made their own protocols for the practice of teleconsultation by co relating to the central one in order to cover the medical services during this pandemic considering lockdown.

All such guidelines or protocols are made with a vision to deliver abrupt medical consultation to the patient who are in true need of medical attention or physician's advice. The chief purpose for encouraging teleconsultation was to avoid people from moving out of their homes just to lower down the spreads of this virus thus the pandemic. Along with the continuous direction

of the governments from state and central and as one's social duty most hospitals have now developed their own teleconsultation services system. Some of them have managed to build mobile applications and shared with their registered patients to consult doctor of their choice by selecting through specialization or list of doctors from the hospital, whereas some has started consulting through telephonic calls and text messages and some have even built application for public and tied up with various doctors from different multi facility hospitals and small clinics so that patient can consult to a doctor from list of doctors.

All such conveniences are the abrupt solution for current situation. But for common person, need to log on such facilities, have to fulfil certain number of formalities like registration by sharing their contact details, government authorized unique ID's etc for which they also need of some technical assistance as well. It has been observed that some hospitals ask patients to install some application/software to their devices or call the frontend person and get their appointment scheduled and get the user ID and password for same.

Integrating Mobile App for Teleconsultation Services:

Integrating the mobile app for teleconsultation services for delivery of healthcare services is being used in this method. The app is provided by Akhil Systems Pvt. Ltd., Delhi to their various clients (hospitals). The hospitals have used the mobile apps developed as per requirements of doctor's and patient's expectations are also considered for the patient app. The reasons behind choosing mobile application are:

- People nowadays are much compatible with mobile apps rather than using web-based links.
- Easily accessible.
- Patients got the app free of cost from play store and IOS store.
- Patient can select from all available time slots and date of choice on which they need to consult to doctor.
- Patient can share the document against the appointment with any particular doctor in case they need any advice on that.
- Doctors can easily view the lab reports, diagnosis, vitals recorded and documents uploaded by patient against any particular appointment for any patient.
- Video and audio transmission makes patient much satisfied as they can see whether they're consulting to right doctor and no one other than the doctor is viewing their information during the call.
- Less usage of data and less network issues.

The setup requires

Objective

Some major objectives of this study are as follows:

- To identify the use of mobile application for tele-consultation.
- To measure the patient satisfaction with the mode of consultation.
- To identify the safety concerns among people while consulting to a doctor through a video call.

Literature Review

S No.	Source Author	Year	Methodology (Study design & sample size)	Findings	
				Facilitators	**Barriers**
1.	Pheno Mon Joy	2020	A survey was conducted in which a questionnaire was prepared and sent to patients of different areas of India of which 200 responses were reported out of 800-900 which also constitutes the sample size	• Refund given to patients in case of cancellation of appointment when prior informed. • Satisfactory follow up taken. • Speciality wise patient consultation given.	• At first people hesitated in paying the amount. • Technical Limitations • Lack of literacy
2.	Anders Klingberg	2017	A survey was conducted for teleconsultation service specific to diagnosis and acute care for injuries.	• All kind of injuries to the patients were taken into consideration no matter mild or acute. • Patients were able to consult to doctor any time during the day and patients at night time were also entertained up to some extent.	• Lack of internet speed. • Patients were unable to show the severity of the injury in some cases.

3.	Nikita Pandey	2020	A pilot study on Teleconsultation at tertiary care government medical university during the lockdown due to covid 19 in India	• Survey questionnaire was filled by almost 98% of study population which helped accuracy of result. • All patients responded gradually.	• Communication gap due to language barrier with few participants.
4.	Padmanabha Shenoy, Sakir Ahmed	2020	The survey was an audit of the feasibility and patient response of switching to teleconsultation in India.	• Only hospital present in nearby area of around 100 km.	• Charges were high. • Only Rheumatology clinic was there alone and patients can only contact there for other concerns as well.

Findings

1. Majority of the study population (60-65%) were familiar with concept of teleconsultation. Large proportion (80-85%) of people were not having any experience of teleconsultation and also faced difficulty in using the service and after all the difficulties they rated well for the consultation.
2. The users reverted with feedback that states that they found mobile app an easy and convenient way to reach to their doctor also found the app as a useful mean with few problems detected such as they found difficulty in understanding the terms used in the app and scrolling and zooming within the app.
3. Teleconsultation service was found feasible in government medical university for various services such as ophthalmic during the lockdown also about 40% of the population required physical examination, typically due to undefined diagnosis or due to the not enough response to prescribed treatment.
4. Out of all the study population, about 70% of them agreed to participate in the study and some either cancelled or rescheduled their appointment and overall median satisfaction level was 9 out of 10 on NRS (Numerical Rating Scale) scale. The

population agreed to participate on a specific concern that social distancing would help in reducing the spread of corona virus.

Methodology

An online feedback form-based survey targeting the patients from all client hospitals in Delhi NCR region was circulated. The total of **250** patients were targeted out of which **167** agreed to participate on voluntary basis. Many aspects were taken into consideration with respect to the functionalities available in the mobile app. All the patients were already having mobile app installed into their device shared by the hospital admin itself so that they get familiar with the features available and the participation in the survey was completely volunteered and they were pre-informed that all details asked in form would stay confidential and would only be used for study purpose.

If patient is already registered with the hospital, they just need to log into the app using their registered mobile number and if any patient is new or is not already registered then a provision to sign up is given into the app by simply adding few details asked like name, mobile number, email-ID and address. Once patient gets into the app, they get the facility of booking the appointment by selecting doctor and choosing their convenient time and date and after booking the appointment can share the documents such as lab reports, some past medical history for doctor to review before the appointment. Patients can also view their prescriptions or medical reports from previous visits if any.

Background & Rationale

The process of teleconsultation using the mobile app is a challenging concept in many areas of world where there is problem of internet or its speed and where their people are not able to use smartphones. Mobile based app for teleconsultation purpose is designed unambiguously for patients so they can easily get their lab reports, diagnosis, and any prescriptions shared by doctor by using pre filled templates from the HIS specific to disease and symptoms or diagnostics sometime, based on different specialities. On the other hand, considering the commercial chat services, usability and customer acceptance becomes the vital part for success of the idea.

Review and Follow Up

A follow up call is done to patient and asked the feedback for the appointment. Patients were very happy with the follow up support. As per now the time slots are available for the hours of daylight but can be expand for night hours as well considering the need of situation and increasing demand.

Expense to the Patient

Different hospitals have different charges for teleconsultation services whereas some are giving free of cost teleconsultation services to their registered patients and some are giving numbers of consultations and other services under a package.

- **Study Design**- A cross-sectional study is been done based on survey form and literature review of some research articles about satisfaction level of patient with tele consultation to design the survey questionnaire.
- **Study Data**- Google form circulated to and filled by patients living in Delhi NCR of few client hospitals that are already using mobile application for consulting to a doctor and literature review of some research papers based on patient satisfaction about teleconsultation.

Advantage to the Patients

As the belief stays with one simple principle that the costumer's satisfaction is the ultimate aim, the amenities they get is of great importance.

- A patient desires the kind attention of doctor when they are sick or not well. The concept of teleconsultation makes it possible for patients to connect with doctor at their favourable time.
- Patient gets the advice from various specialists as per the need as they get the services when they visit hospital.
- Patients gets the prescriptions on their device and any referral for diagnostic tests can be easily done within the app itself.
- Patients save the time and cost of travelling to the hospital and other facilities for investigational tests.
- Patient no longer need to wait in the waiting area to consult to the doctor as they get the provision of choosing time slot as per their own convenience.
- Patients are now safe from other virus that they might get when they go to the hospital.
- Medical records can be easily maintained in case of teleconsultation as the whole consultation process comes to digital platform.

Result

The study was conducted to measure the satisfactoriness, acceptance and impression of the mobile app-based teleconsultation service to patients. The data was collected through google form circulated to patient through the hospitals across the Delhi NCR region, who are registered with hospital and accepted to participate for this study. Some thousands of patients availed the service during the lockdown period of February, 2021 to May, 2021, samples were collected completely voluntarily based.

Table 1 illustrates the first phase of survey, which asks the participant whether they're interested to participate or not and only when they accept to participate, they can go to section 2 which involves the questionnaire of survey form.

Description	Yes	No
Are you willing to participate in the survey?	98%	2%

This table indicates that majority percentage of patients have voluntarily contributed into the survey.

Table 2 specifies the age group of people participated and the gender proportion that has participated either for themselves or for one of their family members, about the experience of using the teleconsultation mobile app shows that majority of the people who had participated in the study are young people viz from age group of 35-50.

Description	Proportion
Age	18% (0-30), 72% (30-50) and 10% (50 and above)
Gender	85% (Female) and 15%(Male)
Category (by profession)	28.6% (Front line workers) and 71.4% (General Population)

Also, this table indicates that majority of people were general people that participated in the survey like people doing some job and dependent on their family etc. Whereas some people

were directly linked to the healthcare and gave their valuable contribution in the study about mobile app for teleconsultation.

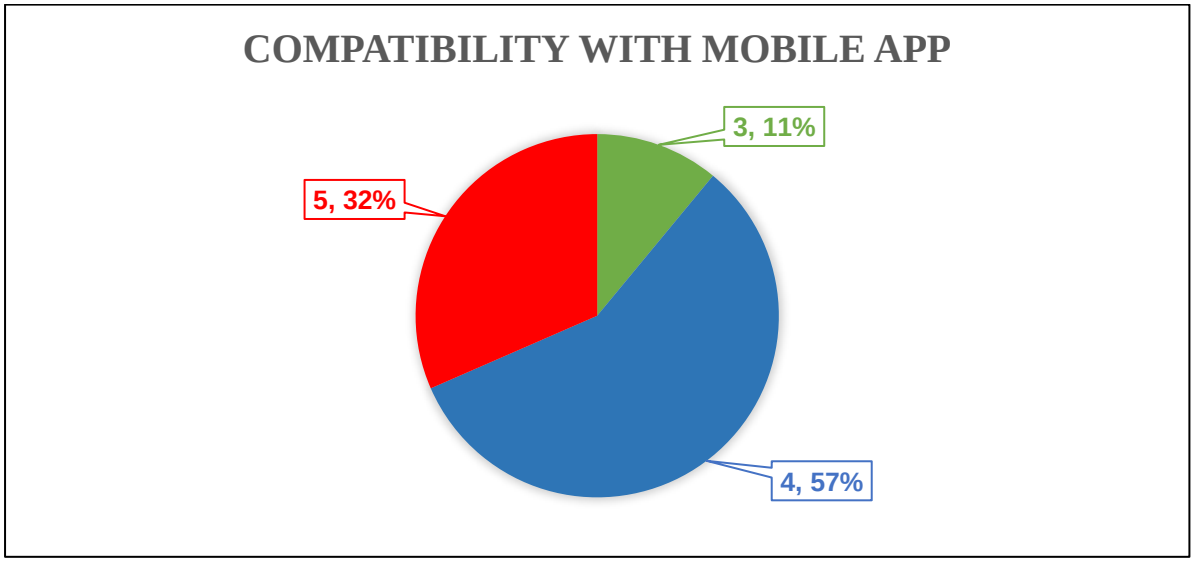
Table 3 shows that how much the patients feels compatible with using mobile application in context of the teleconsultation concept, it also shows that the majority of the people who participated either liked or felt maybe for the idea of teleconsultation concept using mobile app and it also shows the names of other mobile based app specifically for teleconsultation like Meddo, Practo, E-Sanjeevani, Doctors diary, Viveo Health India and Mfine that people are aware about and the rating about how do they like the app showed that the majority of the people actually liked the app and rated to recommend the app to others as well and none of them stated to dislike the app, all the participants supported for the app to be productive in future as well, the maximum proportion of 68.4% felt safe with the mode of consultation (video mode) and few people (31.6%) has opted for neutral and the majority (63.1%) of the people showed their satisfaction with the quality of video and audio during the call whereas 20.1% has given rating of 4 of 5 and around 16.8% has given 3 rating out of 5.

Description	Proportion
Compatible with Mobile app	12.1% - 3 out of 5 63.2% - 4 out of 5 34.7% - 5 out of 5
Patient satisfaction for the video mode of consultation	62.8% (Very Satisfied) 22.8% (Satisfied) 14.4% (Neutral)
Other Mobile based apps for teleconsultation	Meddo, Practo, E-Sanjeevani, Doctors diary, Viveo Health India and Mfine
Overall Rating of the app	Neutral (15.8%) Recommendable (73.7%) Highly Recommendable (10.5%)
Whether or not productive in future	100% (productive)
Felt secured while connecting with doctor	88.4% (Recommendable) 11.6% (Neutral)
Quality of video and audio	20.1% (Very satisfied) 63.1% (Satisfied) 16.8% (Neutral)

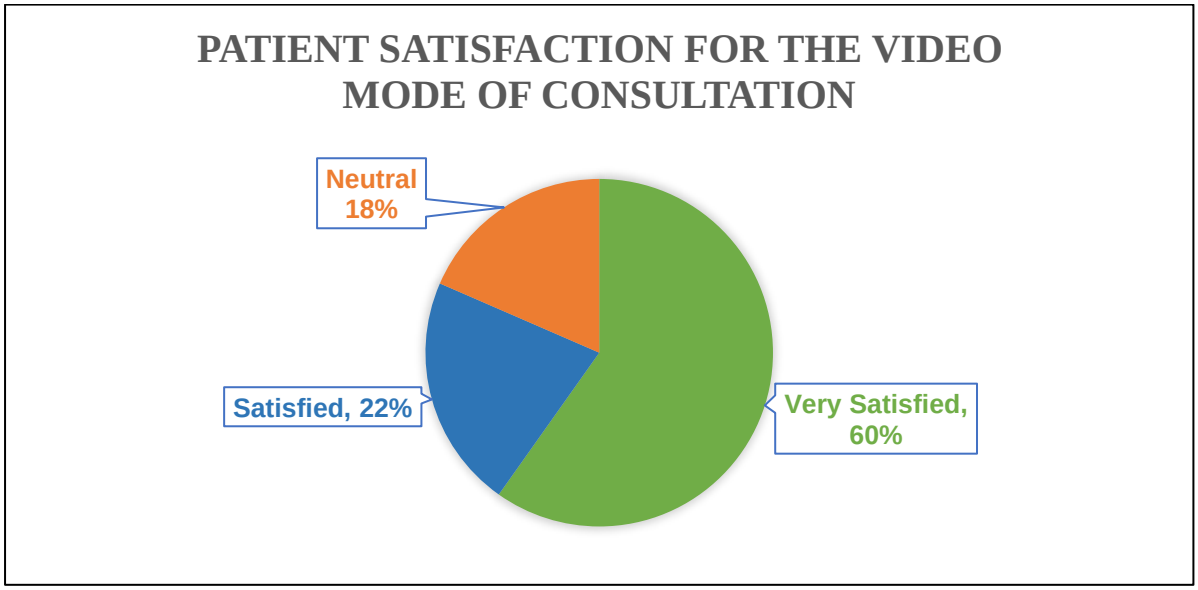
All the objectives are achieved here, the very first objective was about identifying the compatibility with the mobile app which was found to be that over 60% of people gave 4 stars rating out of 5. Another objective was measuring the patient satisfaction over the mode (video) of consultation, which also stated clear results stating that around 62.8% were very satisfied whereas, 22.8% rated to be satisfied and 14.4% rated to be neutral. The last objective was specific to the safety concerns while consulting to a doctor through video calling mode, and that also found out to be that 88.4% were very satisfied and stated the concept to be

recommendable to their family and friend and around 11% of the population rated neutral for their safety concerns particularly with the app.

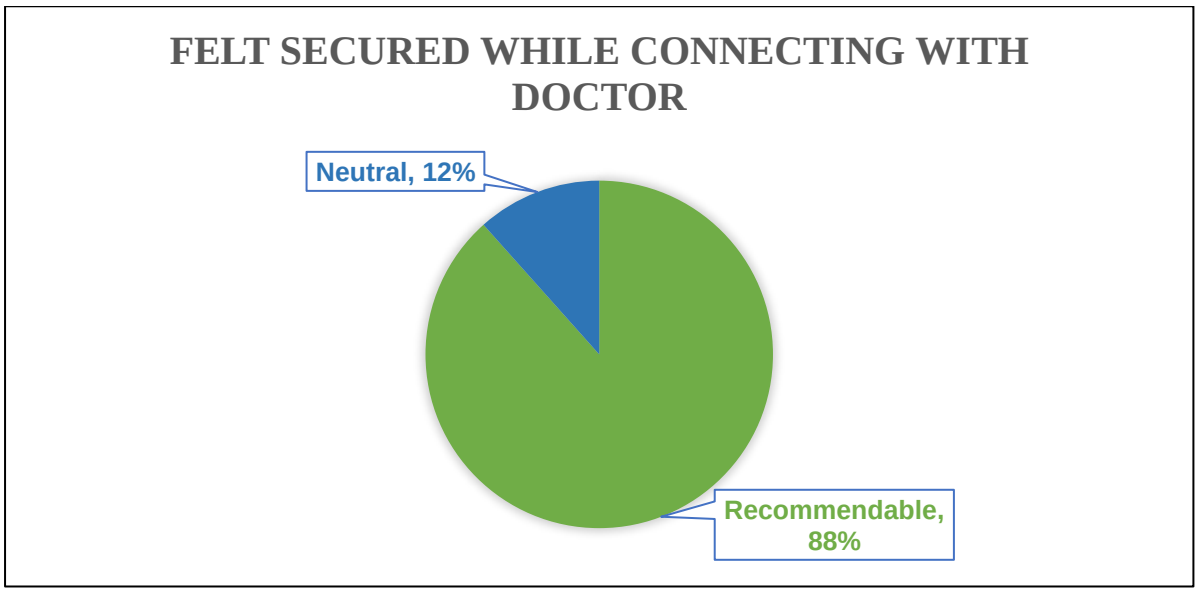
Result for objective 1:



Result for objective 2:



Result for objective 3:



Discussion

As the world is suffering through the pandemic due to the covid 19, the healthcare services hinder due to the unexpected load on doctors and other staff also due to the countrywide lockdown in many countries around the world counting India. Due to which the OPD part is suspended currently as to prevent the virus from spreading hence a patient can only go to the hospital in case of surgery or any emergency comes up. With the approaching risk due to the virus the teleconsultation concept has come very beneficial for patients for routine healthcare check-up. It aided as support for more than 2-3 months when conservative services were troubled. The teleconsultation concept was used for the very first time by many patients and doctors across the world, but it good to say that it would be used more often in the upcoming times. Although the result of survey showing that patient is accepting the concept of teleconsultation while being safe at their own place. The app can be enhanced by adding functionality for patient to buy medicines prescribed by the doctor and book tests advised or by their own while staying at home such home sample collection for blood or urine testing etc.

Conclusion

Teleconsultation was remarked as an evolving field with recommendable public impact observed considering the situation of pandemic. It was notable that people are agreeing to the service and even valuing the idea as well. It can't be denied that with fewer more modifications, the concept of teleconsultation will be accepted by the people at a much larger scale.

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None

Conflicts of Interest

There was no such conflict of interest

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Annexure: Survey Questions

Name

Age

Gender

You belong to (Choose from the following category)

1. How comfortable are you in using mobile applications for consulting to a doctor?
2. Do you think mobile based applications are a good idea for consulting to a doctor?
3. Any other mobile based app you know or had ever used to reach out to a doctor/specialist of your choice from any facility? (Please specify name)
4. How much are you satisfied with the login feature while doing login to your account or doing sign up?
5. What other improvement or additional option/feature you think of within the app? (If Any)
6. How much are you satisfied with the video mode of consultation within the app?
7. How much are you satisfied with the video and audio quality?
8. Are you satisfied with the time you're getting with your doctor?
9. How much do you feel secured while talking to your doctor?
10. How much are you satisfied with the format of your reports in the app?
11. Do you think Tele-Consultation could be productive in future as well?
12. Based on your experience how much do you rate the app?