

Study on Doctors User Satisfaction with an Electronic Medical Records System DNA Med-Mantra

By

Shelly Singh

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2016-2018



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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Shelly Singh** student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at **Indraprastha Apollo Hospital, Jasola, New Delhi** from 19th February to 17th May, 2018.

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

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



(Col.) Dr. Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Dr. Charu Mathur
Associate Professor
The IIHMR University, Jaipur



Certificate of Completion

The certificate is awarded to

Dr. Shelly Singh

In recognition of having successfully completed her Internship in the department of

Information Technology

and has successfully completed her Project on

**A study on Doctors user satisfaction with an electronic medical records system DNA
Med-Mantra**

Date: 19th Feb'18 to 17 May'18

Organization: Indraprastha Apollo Hospitals, New Delhi

He/ She comes across as a committed, sincere & diligent person who has a strong drive and
zeal for learning

We wish him/her all the best for future endeavors

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THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **A study on doctor users satisfaction with an electronic records system DNA MED-MANTRA** at **Indrapastha Apollo Hospital, New Delhi** submitted by **Dr. Shelly Singh** Enrolment No- **IIHMR-U/01/2016-18/0594** under the supervision of **Dr. Charu Mathur**, Assistant Professor, The IIHMR University, Jaipur for award of MBA in Hospital and Healthcare Management of the University carried out during the period from **February 19, 2018 to May 17, 2018** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.



Signature

ACKNOWLEDGMENT

I would like to express my special thanks to **Mr. Ashok Kaushik** (Dean, IIHMR University) and **Mr. Hem Bhargava** (Placement & Training Head, IIHMR University) for giving me the golden opportunity to pursue my dissertation at **Apollo Indraprastha Hospital, New Delhi**. Secondly, I would also like to thank my parents and friends who helped me a lot in finalizing my projects within the limited time frame.

I am using this opportunity to express my gratitude to everyone who supported me throughout the period of dissertation at Apollo Indraprastha Hospitals, New Delhi.

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I express my warm thanks to **Mr. Sreekanth Mishra (Project team leader)** for his constant support and guidance throughout my conduct at Apollo. Also, my successful completion of the projects would not have been possible without the helping deeds of **Mr. Rahul Sharma (OPD Manager)**

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At the end, I am thankful to God and my heartfelt gratitude to my parents and friends who supported me throughout the course

THANK YOU ALL

Dr. Shelly Singh

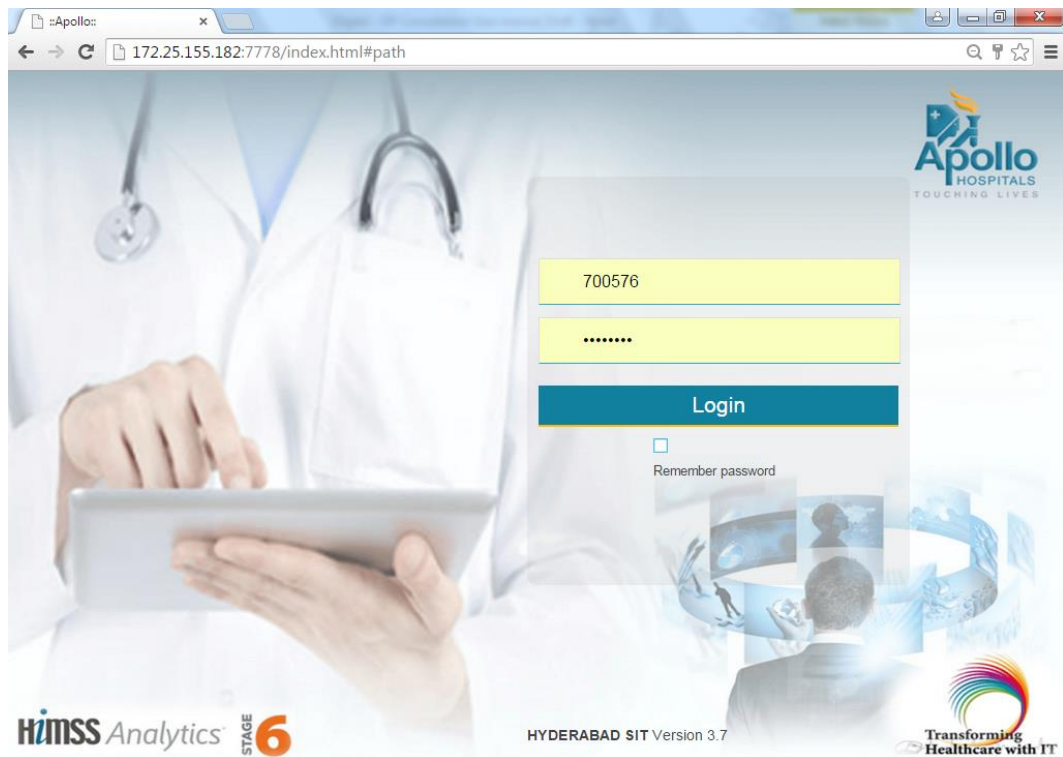
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Electronic Medical Records System DNA Med-Mantra



INTRODUCTION

An always advancing healthcare sector with a demand for a healthy population has seen a rapid advancement in healthcare services and levels of care which are current requirement for healthcare policy makers.

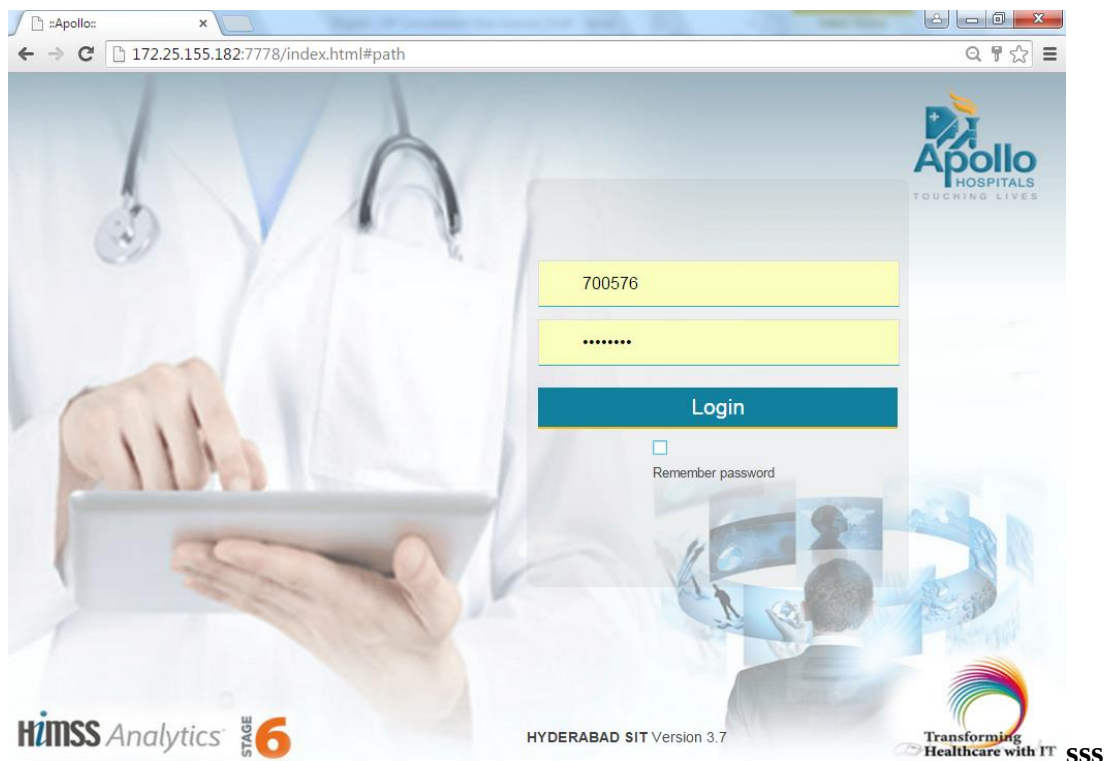
Due to increased demand for excellence in service provided, hospital needs to improve the service quality provided to a patient. To achieve a standard delivery of care in hospitals, many leading tertiary care hospitals have switched to electronic medical record system. The use of medical record system can reduce clinical errors, support healthcare professional's decision-making, increase the efficiency and quality of patient care. Therefore, for better transparency and visualization as per the government norms, it is mandatory for all Healthcare institutions to digitalize their services.

The overall satisfaction of using electronic health records enhances the productivity of the physicians and increases the time for physician patient interaction. The electronically available data enables quick access of the patient records for coordinated and efficient care. The layouts of the EMR designed to improvise and enhance the working productivity of the physicians.

Health information technologies (HIT) and electronic medical records (EMRs) have created a lot of excitement among patients and doctors. An EMR maintains comprehensive records of an individual's health-related information that is created, gathered, managed, and consulted by licensed clinicians and staff from a single care providing organization. The common view of doctors is that the use of EMRs can help eliminate hurdle present in clinical processes, and improve the quality of care.

Tata consultancy services (TSC) being the player in the software industry was given the task to build and develop online EMR application and named as "MED-MENTRA" to enable the tracking of patient's records at the digital platform. The mutual agreement by Indraprastha Apollo Hospital and Tata Consultancy (TCS) to develop user friendly application for ease towards Hospital Digitalization and networking within the available service of Hospital.

OVERVIEW OF MED-MANTRA



Med mantra includes both OP and IP Consultation Module

Overview of OP consultation

The OP consultation is an integrated patient management system. The system consist of the patient administration functions, to provide better and efficient patient care services.

The doctor dashboard module is accessed by the doctors.

Logging in and Logging out

Access to the doctor dashboard module is limited only to authorised users. To access the module, login to app with authorised User ID and Password.

Logging into Med Mantra

1. Click the **Apollo** icon on the computer systems. The Login screen will be displayed.
2. Enter your **User Name**.
3. Enter your **Password**.
4. Click **Login**. The doctor dashboard page will be displayed.

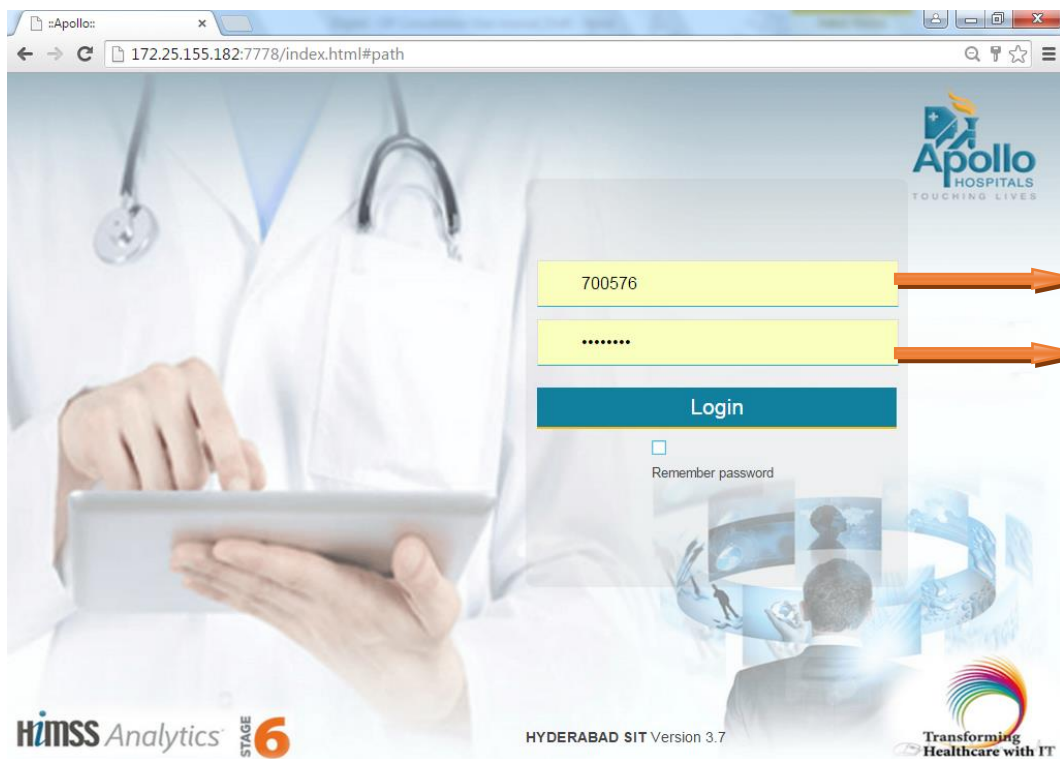


Fig1. The login screen

Click the Logout link placed at the top right of the doctor dashboard. You are logged out of doctor dashboard.

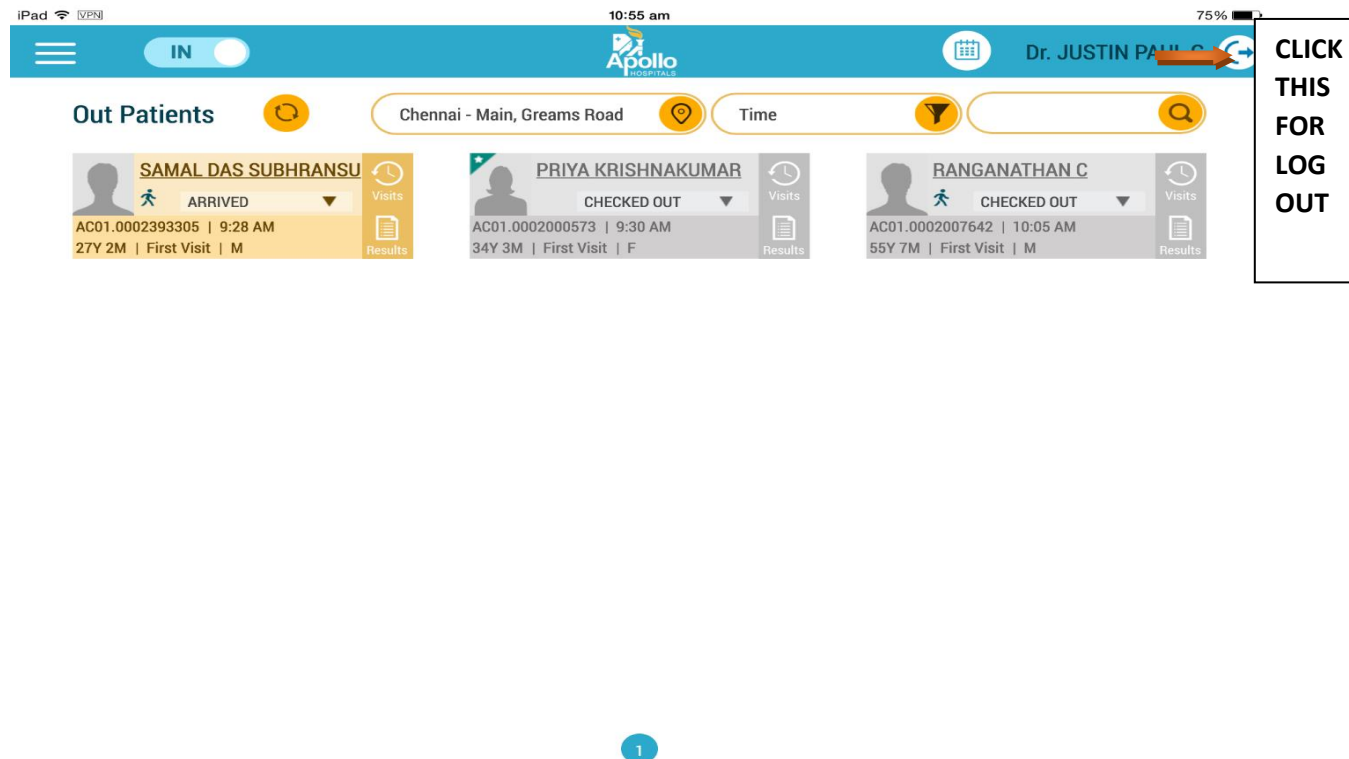


Fig 2.Logging out

DOCTOR DASHBOARD

1. Performing OP Consultation

- Once logged in, Out Patient dashboard screen will be loaded.
- Patient list whose appointment is booked on that day will appear (only credit card payment).
- Patient list appearing will include all patients with all status (Arrived , Checked in and Checked Out)



Fig 3: Doctor Dashboard for OP Consultation (only credit card payment patients)

➤ **OP Dashboard menu items**

- Click on the icon in the left corner
- The menu items will be appearing. On click on that link the respective screen will be appearing.



Fig 4: Menu items

➤ **Patient Search (Cash Payment)**

- Click on Patient search to search all patients (specially cash payment).
- Enter any patient details like name, age, UHID, mobile number and click on search
- The patient details will be appearing in a grid
The status of the patient will also be appearing in the grid

Patient search

UHID	First name	Middle name	Last name
Old UHID	Mobile number	Patient number	DOB
	91 9876543210		
Age between	Period of registration		
To	From  To 		
		Reset	Search

UHID	Name	Age	Gender	DOB	Mobile number	Status	Options
AC01.0002009648	Mrs. UMA KRISHNAN	54Y 0M	Female	10/15/1960	91-9876543210	Active	Please select
AC01.0002009660	Ms. GOWRI K	31Y 6M	Female	4/20/1983	91-9876543210	Active	Please select
AC01.0002011705	Ms. MOHANA T	31Y 6M	Female	4/21/1983	91-9876543210	Active	Please select
AC01.0002028049	Mrs. SEETHA LAKSHMIAMMA	70Y 6M	Female	5/4/1944	91-9876543210	Active	Please select
AC01.0002028379	Mrs. LEENA RAITHATHA	53Y 6M	Female	5/4/1961	91-9876543210	Active	Please select
AC01.0002031358	Mr. MUTHIAH T	66Y 6M	Male	5/7/1948	91-9876543210	Active	Please select

**CLICK
ON
THIS**

Status of the patient will appear in the grid

Patient Search

UHD	First name	Middle name	Last name
APD1.0010862109			
Old UHD	Mobile number	Patient number	DOB
	91		
Age between	Period of registration	Gender	
 To 	From  To 	Select 	Reset Search

UHID	Name	Age	Gender	DOB	Mobile number	Status	Options
APD1.0010862109	Mr. ANKUSH RATHORE	22Y 3M	Male	1/30/1996	91-8882050748	Active	Please select Please select History Report Consu Review

CLICK
ON
THESE

Fig 5. View patients Appointment Details (e.g History, Reports, Consult and review)

UHID	Name	Age	Gender	DOB	Mobile number	Status	Options
APD1.0010862109	Mr. ANKUSH RATHORE	22Y 3M	Male	1/30/1996	91-8882050748	Active	Consult

Fig 6. For The Consultation of the patient click on the “yes” icon

Fig 7.Patient will Appear on the doctor’s dashboard(cash payment)

**CLICK
ON THE
PATIEN’S
NAME**

Fig 8.Click on the patient’s name for the e- prescription writing

CREDENTIALS FOR THE E-PRESCRIPTION WRITING

Vitals

SpO₂

BMI

Habits

My previous visit notes

Auto Text

CLICK HERE FOR ALL PARAMETERS

CLICK HERE FOR GLOBAL

Allegries

Cardiac Risk Factor

Swap Template Format

Complaints

Current medication

Family history

HOP1

Past history

Physical examination

Attachments

Image Name

Diagnosis

Previous diagnosis

Diagnosis	Doctor	Episode type	Date
No previous diagnosis found			

Current Diagnosis

Diagnosis	Side	Location	Type
-----------	------	----------	------

View & Select Result

Investigation Results

Requests

Service name	Comments

Other Tests

Medicines

Medicines	Comments

Procedures Performed

Advice

Referred to

Plan

Follow up

Note to secretary

Special note for next visit

Others

Psychological Assessment : ☐ Normal ☐ Anxious ☐ Depressed ☐ None

Functional Status (Ability to perform routine activities) : ☐ Yes ☐ No ☐ None

Admission : ☐ Yes ☐ No

i Appointment details

OP Consultation - First Visit

2nd
step

Finalize Save as draft Copy from last visit

OP Summary See Recommendation list See Prescription Print Post to Prism Update

1st
step

click on OP Summary to get e-prescription

GetOPServiceRequestsReport 1 / 2

OP Prescription

Patient Name : Mr. R K NAGAR
Age : 58Yr 7Mth 16Days
UHID : APD1.0010868295
Visit Date : 02-May-2018

Sex : Male
OP Number : OP8700

Allergy :- No Known Allergy

Chief Complaints
pain both legs 6 months
Swelling both legs
Heaviness bilateral
Discolouration both ankles

H/O Present Illness
Pain both legs during the day relieved when lying and compression
Heaviness all the time

Past Medical History
Spine surgery 7 month ago
Hypertension
No diabetes

Physical Examination
GC good
No gross varicose veins
Dermatitis bilateral
Bed side colour doppler study - Right leg - SF Reflux, LSV 11.4 mm groin; 5.2 knee; 5 mm below knee; 4.8 mm SSV;
Left leg - SF reflux; LSV 11.4 mm groin; LSV 4.8 knee; LSV 4.4 BK SSV 4.1.

Diagnosis:
Bilateral varicose veins with dermatitis

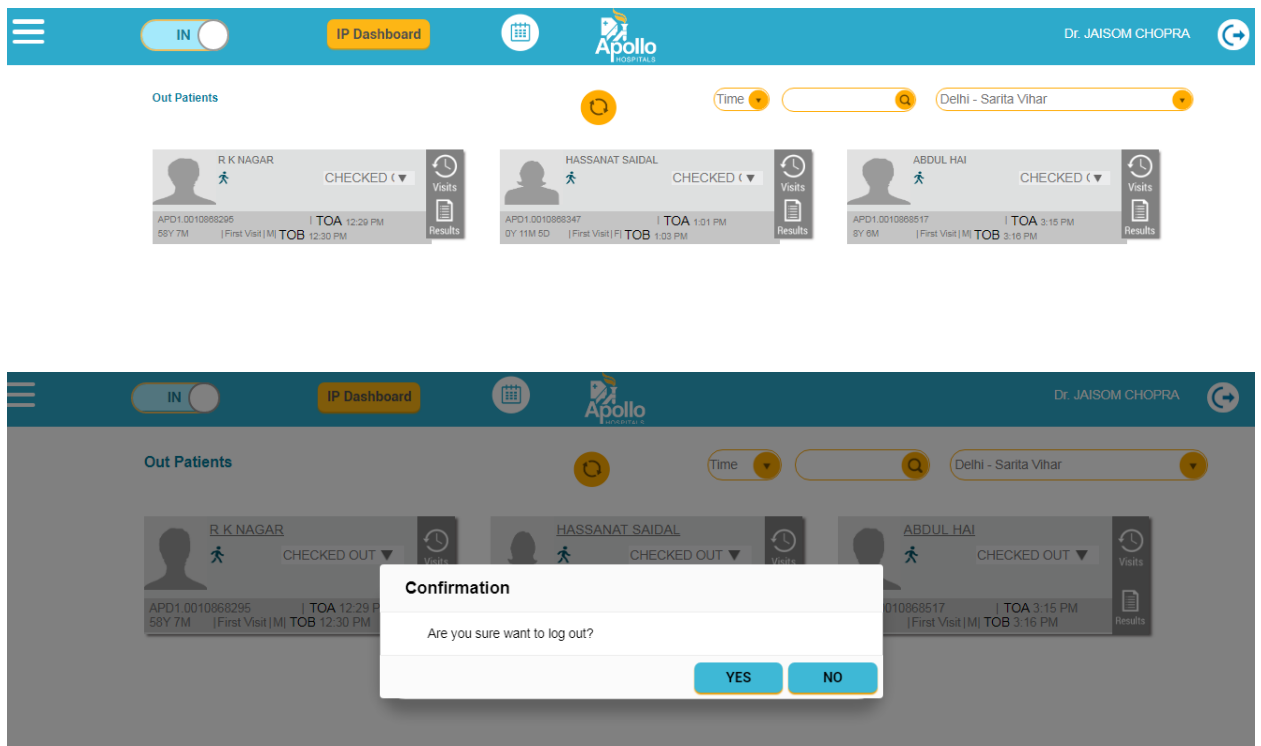
Investigation Results
Colour doppler study for leg veins bilaterally. - 8/3/18 - No DVT but bilateral SF reflux and varicose veins

Advice
Leg elevation
Below knee stockings both legs

Plan
Surgery - Bilateral RFA + sclerotherapy

Printed By:901583 Printed Date & Time : 02-May-2018 15:18 Page 1 of 2

This e-Prescription will save in the Doctor's database as in pdf form and printout takes on the doctor's letterheads which would give it to the patients.



FOR MEDICATION SEREACH

LABH CHAND
APD1.00104581... | 68Y 2M | M Visits DMS

Dr. DEEPAK ROSHA

Auto Text: [CLICK HERE FOR ALL PARAMETERS](#) [CLICK HERE FOR GLOBAL](#) [Cardiac Risk Factor](#)

Back Medicines Previous prescriptions Last prescription

☒ Brand Search ☐ Generic Search

My favourites list [Patient Counseling Message](#) [Drug Food Message](#)

Search medicine Type free text medicine

Drug Strength Quantity Quantity unit Frequency Meals relation

Comments Duration Duration type

Medicines	Comments	Add	In-house	Clear	Fav
FORACART 1 MG/ 2 ML RESPULES 2ML BID		☒	☒	☐	☒
LOFTAIR INHALER 50MCG,110MCG Once		☒	☒	☐	☒
DUOLIN RESPULES 2.5ML 500MCG,1.25MG BID		☒	☒	☐	☒
DERIPHYLLIN RETARD 150 MG TAB 115MG,35MG BID		☒	☒	☐	☒
DUONASE 9.8ML NASAL SPRAY 70MCG,30MCG BID		☒	☒	☐	☒
PANTOCID DSR TAB 30MG,40MG BID		☒	☒	☐	☒

Cancel Save

LITERATURE REVIEW

Physician Satisfaction With Electronic Medical Records In A Major Saudi Government Hospital done by **Hana Alharthi, PhD, Adel Youssef, PhD, Salma Radwan, BS, Sukainah Al-Muallim, BSAI-Tuwaileb Zainab, BS**. “The objectives of this study were to measure physician satisfaction with a recently introduced electronic medical system and to determine which of the individual attributes of EMR system were related to physician’s satisfaction”. “The result of this study reveals that a total of 115 physicians answered the survey and only 40% were satisfied with the overall system”. “The best predictors of overall satisfaction were a performance in the form of speed, integration with workflow, and patient information, such as accuracy, completeness, and timeliness”. “The conclusion of the study was physicians were generally not satisfied with system. Continued evaluation of such the systems and feedback from users should guide selection and implementation”.

A Study On Hospital Information System At A Tertiary Teaching Hospital done by **Syed Murtuza Hussain Bakshi & Shakeel.M Owaisi Hospital and Research Center, Hyderabad**. “and motivating forces behind HIS at a tertiary teaching hospital which is explorative in nature”. “The study also focuses on details about hardware, operational procedure and other important facts pertaining to forces resulting in acceptance of HIS”. “The conclusion of the study was that, the Motivating Forces such as. User Friendliness, Enhanced Communication, Decision Making, Work Efficiency, Resources Utilization, Better Process Flow and Quality Assurance made staff rely on HIS while some Hindering Forces like Training for Employees, fully integrated system; Seeking Help, Cost Containment and Non-Existence of Computers acted as barriers”. “The purpose of this study is to understand infrastructure, system practices, hindering”.

The Implementation Of Hospital Information System (His) In Tertiary Hospitals In Malaysia: A Qualitative Study done by **Aniza Ismail¹, Ahmad Taufik Jamil², Ahmad Fareed A Rahman¹, Jannatul Madihah Abu Bakar¹, Natrah Mohd Saad¹, Hussain Saadi-**. “This study is to describe those aspects of the implementation of hospital information system in three tertiary hospitals in Klang Valley; Serdang Hospital, Selayang Hospital and University Kebangsaan Malaysia Medical Centre (UKMMC)”. “A qualitative study was conducted to obtain views on information system development and implementation in the hospitals mentioned above”. “In-depth interviews with personnel representing both the system providers and the end-users were done guided by a questionnaire”. “The results of the interviews were categorized into few themes namely the system development, human resource, scope of implementation, support system, user-friendly, training, hardware and security”. “There were differences in hospital information system development and implementation in the three hospitals”. “Each system has its own strengths and weaknesses that make it unique”. “In developing HIS, it is important to ensure the system can work effectively and efficiently”. “Quality human resource, good support system, user-friendly and adequate training of the end-user will determine the success of implementation of HIS”. “Upgrading of hardware and software as needed is the basis to keep up with the pace of technology advancement and increasing number of patients”. “It is hoped that HIS will be implemented in all other hospitals with effective integration and networking”.

Adoption of Information System by Indian Hospitals; Challenges and Roadmap done by **Ranjeeta Basra Korgaonkar**- “This study described that with the introduction of HIS in hospitals, there has been considerable improvement in quality and standard of patient care being provided by hospitals”. “Information systems have also been helpful in efficient hospital management”. “There are innumerable other benefits such as ease in collection and retrieval of accurate and complete medical information of patients, lower operational and treatment costs, less time to retrieve patient medical data, easier interpretation of clinical data and availability of warnings for exceptional medical cases, such as, drug to drug interaction and other safety and interaction alerts, faster return on investment, lesser pilferage and revenue leak incidences etc.”. “At a time when hospitals are under intense pressure to improve the quality of patient care and patient safety; hold down costs and also adapt to new technological innovations, with the use of Information Systems, they can grow organically with increasing measures of patient satisfaction and financial stability”. “By adoption of Information Technology to its fullest, a hospital can still be focused on delivering excellence in patient care and achieving improved patient experience in terms of quality and satisfaction; at reduced costs and while still making profits”. “More and more Indian hospitals both government and private in nature, irrespective of their size, specialty or vision must adopt information systems and technology and reap the benefits that it has to offer”. “This is the only inevitable way for healthcare delivery system in India in years to come”.

A Case Study Of An EMR System At A Large Hospital In India: Challenges And Strategies For Successful Adoption done by **Jeremiah Scholl, Shabbir Syed-Abdul b,c , Luai Awad Ahmed**- “This paper presents an ethnographically inspired interpretive case study of the Electronic Medical Record (EMR) system at Sankara Nethralaya hospital in India”. “It presents challenges related to the adoption of the system and methods and strategies that were utilized in order to overcome these challenges and help the system be adopted successfully”. “One of the more notable challenges at the hospital was a user base that included skeptical users, those lacking computing skills, and that had a history of rejecting designs”. “Despite these barriers the hospital was able to adopt the EMR system successfully”. “Notable issues related to the success of the system include the design strategy that was eventually used, and critical technical and social features of the system intended to support skeptical users and those lacking IT skills”. “The study contributes to overall understanding of the environment at large hospitals in developing countries as it relates to the adoption of EMR systems, and helps inform on methods that can be used to improve the adoption of EMR systems in similar contexts in both developed and developing countries”.

OBJECTIVES

- To study the workflow of Med-Mantra.
- To assess the satisfaction level of the doctors using electronic medical record system.

NEED FOR RESEARCH

- An electronic medical records arena of information sharing within a medical practice naturally reduces unwanted hand transcribed errors.
- The problem of lost or misplaced patients file also eliminated.
- The reduction of medical errors represents the benefit to both patient and doctor.
Electronic medical records systems represent all the various aspects of a medical practice that works as a whole to form a functioning system that more effectively cares for patients and benefits the medical practice.
- EMR in Hospitals facilitates e-Prescribing and clinical documentation capabilities.
- Real- time availability of the data.

RESEARCH METHODOLOGY

1. **Study Location:** Out Patient Department (OPD) of Indraprastha Apollo Hospitals.
2. **Study Population:** Doctor in Out Patient Department (OPD) of Indraprastha Apollo Hospitals.
3. **Study Design:** Cross-sectional (Descriptive Study).
4. **Study Duration:** 3 Months.
5. **Sampling Technique:** Purposive sampling
6. **Sample size:** 100 (minimum).
7. **Data Collection**
 - 1) **Data collection tool:**
 - Checklist – on the basis of observation and interview with OPD consultants and staff.
 - 2) **Data collection method:**
 - Reviewing of MED-MANTRA manual, Polices, Digital Network Apollo (DNA).
 - Interactions with hospital's staff and consultants

RESULTS

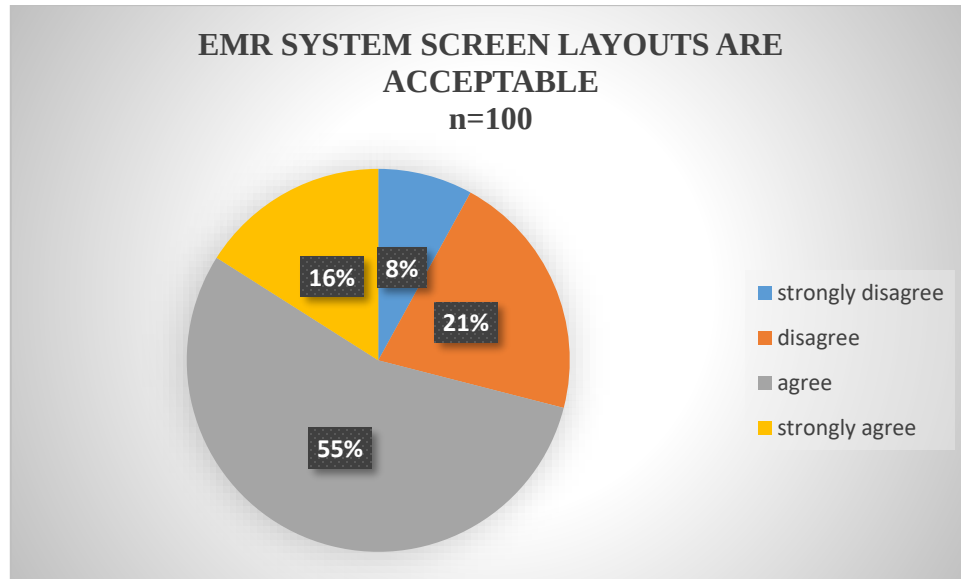


Fig 9

INFERENCE: The above data depicts that 55% of doctors agree that EMR System screen layouts are acceptable.

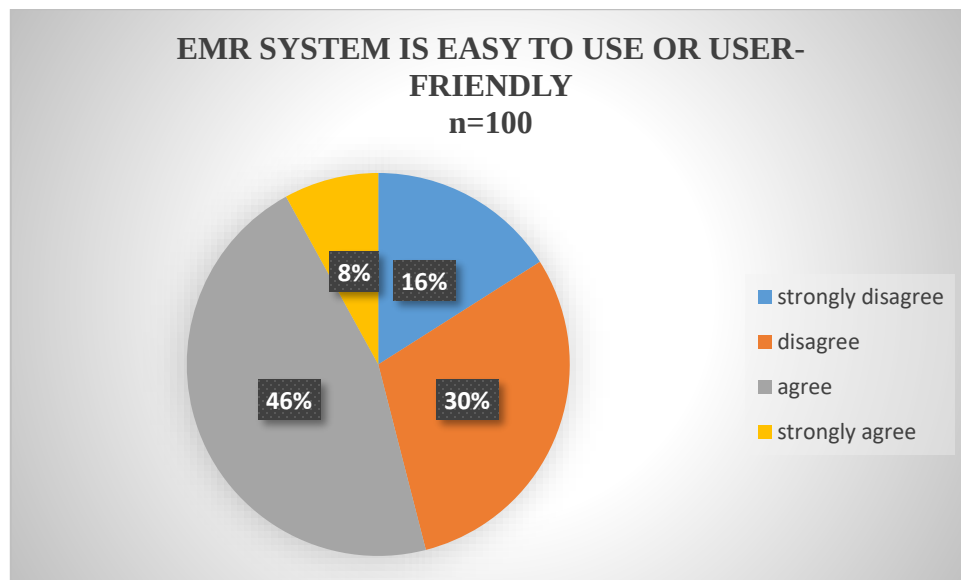


Fig 10.

INFERENCE: The above data depicts that 46% of doctors agree that EMR System is easy to use or user-friendly whereas 30% has denied.

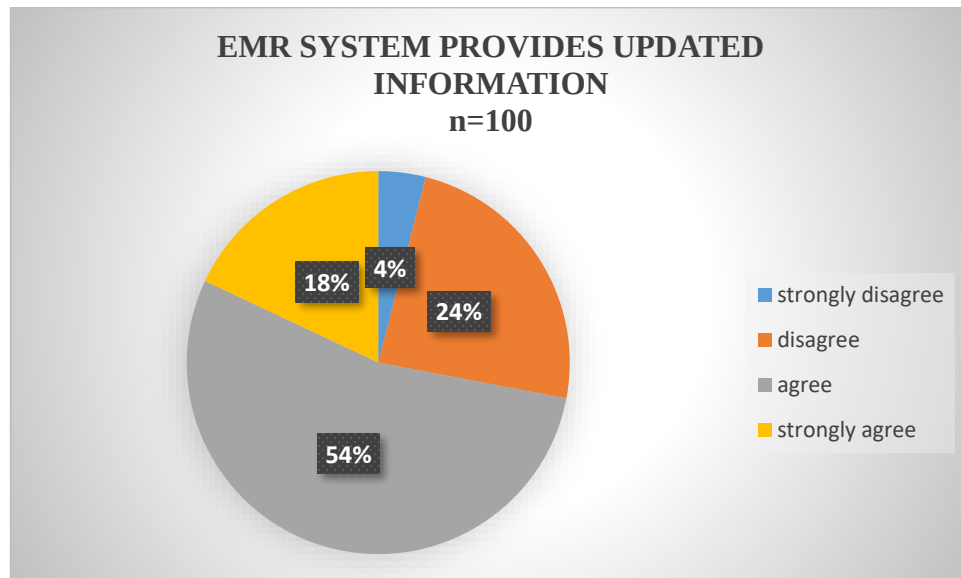


Fig 11.

INFERENCE: The above data depicts that 54% of doctor agree that EMR System provides updated information.

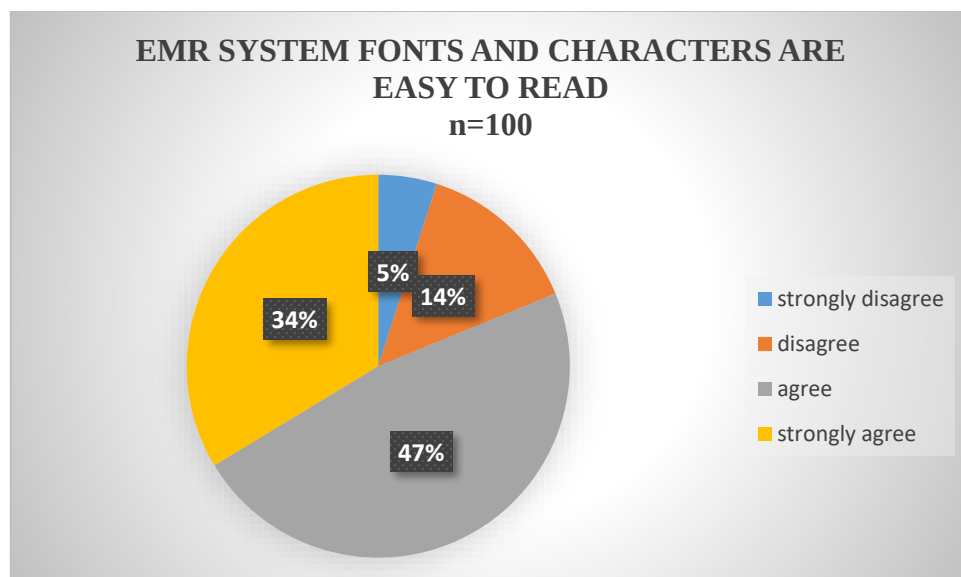


Fig 12.

INFERENCE: The above data depicts that 47% of doctors agree that EMR System fonts and characters are easy to read whereas 34% has denied.

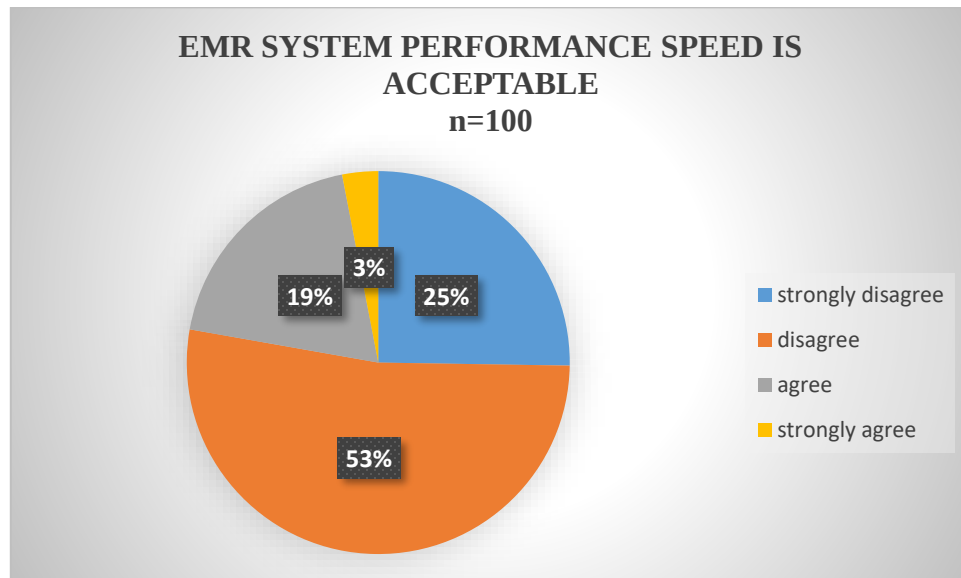


Fig 13.

INFERENCE: The above data depicts that 53% of doctors disagree that EMR System performance speed is acceptable

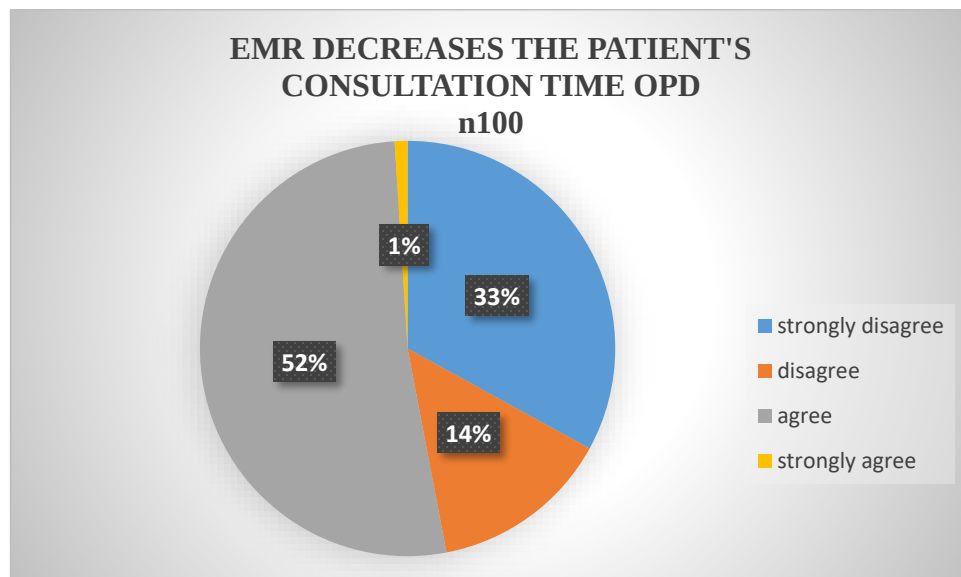


Fig 13

INFERENCE: The above data depicts that 52% of doctors agree that EMR System decreases the patient's consultation time in OPD

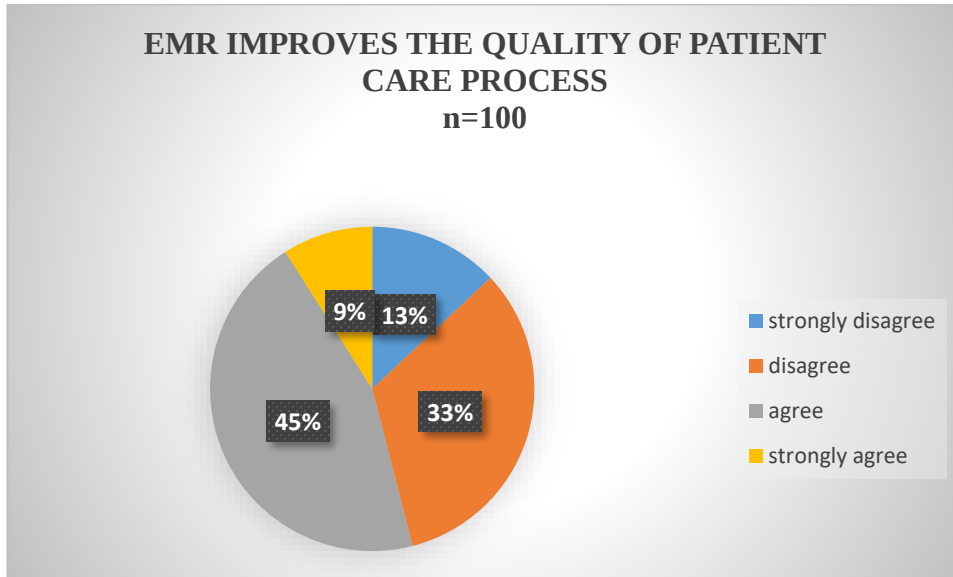


Fig 14.

INFERENCE: The above data depicts that 45% of doctors agree that EMR System improves the quality of patient care process.

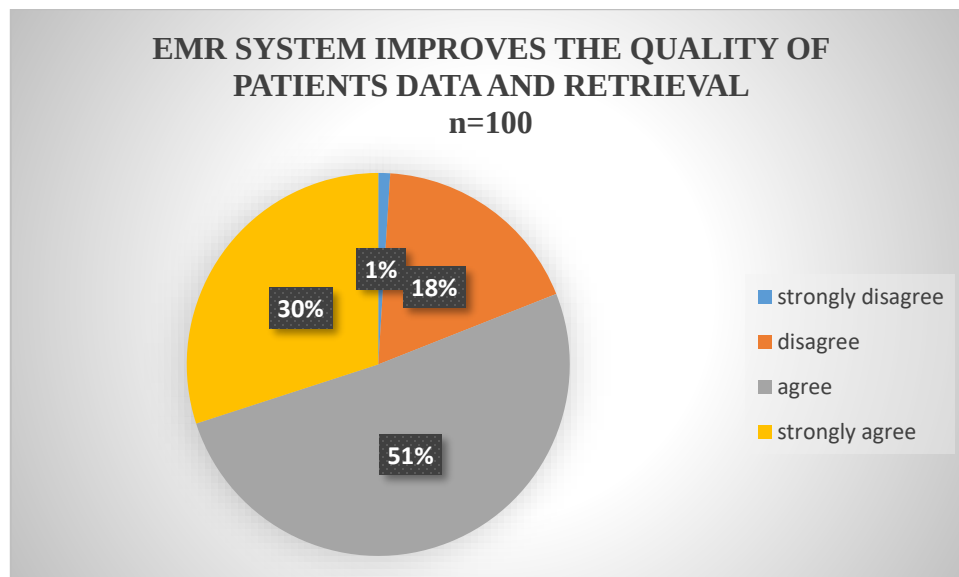


Fig 15.

INFERENCE: The above data depicts that 51% of doctors agree that EMR System improves the quality of patient's data and retrieval

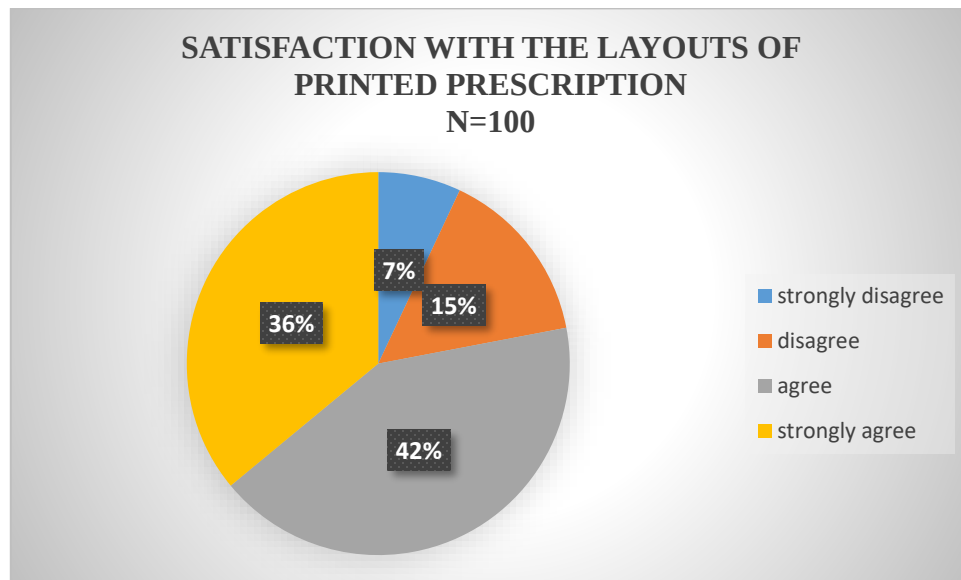


Fig 16.

INFERENCE: The above data depicts that 42% of doctors satisfied with the layout of the printed prescription.

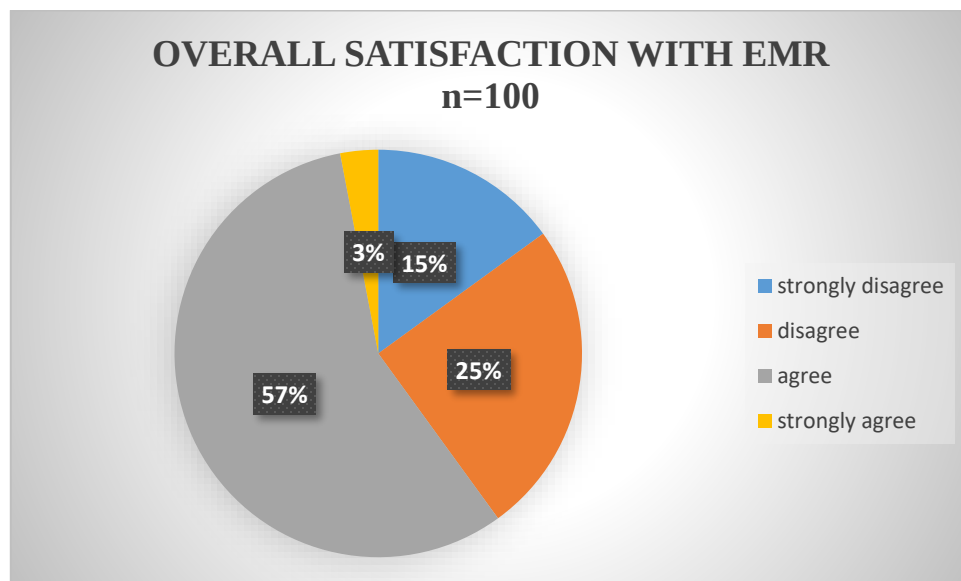


Fig 17

INFERENCE: The above data depicts that 57% of doctors satisfied with EMR System.

OBERVATIONS

1. The pre-configuration of the I.T. systems within consultant's chambers to incorporate essential application requirement have planned as per the project.
2. If any breakdown or sever down occurstowards the application at any locations of consultant's chamber are being monitored and regularize by the Technical Support Evaluation team.
3. The framework towards Consultants onboarding has done as per the suitability/availability of the consultant's appointment without hampering the OPD process.
4. All the queries and complaints regarding the software (i.e. e-prescription) are been resolve by the EMR team.
5. With the enhancement of the process flow, minimizing turnout time of patient's consultation in OPD has shown doctors positive approach towards EMR system

FINDINGS

1. Most of the Doctors agree that EMR is user-friendly and easy to use.
2. For the majority of Doctors, EMR screen layouts are acceptable.
3. Most of the Doctors agree that EMR provides updated information (i.e. Appointment booking, Patient's Record)
4. Most of the Doctors agree that EMR fonts and characters are easy to read.
5. Doctors are in favor of using EMR, as it decreases Patient Consultation time.
6. Majority of doctors agree with the statement that "using EMR can improve the quality of Patient Care Process, Patient Data, and Retrieval."
7. Most of the Doctors are satisfied with the layout of printed prescription.
8. The progressive approach and satisfaction towards using EMR show 44% which has been the success growth towards the project.
9. The Cumulative analysis through statistical interpretation have been presented on a graphical note showing the progress tracker on a monthly basis.

MONTHLY TRACKER REPORT

S.NO	MONTH	TOTAL NO. OF DAYS	TOTAL NO. OF DOCTORS ON BOARDED	TOTAL NO. OF PRESCRIPTIONS
1	FEBRUARY	17	19	31
2	MARCH	27	34	1678
3	APRIL	25	35	2358
4	MAY	9	3	861

Fig no. 18

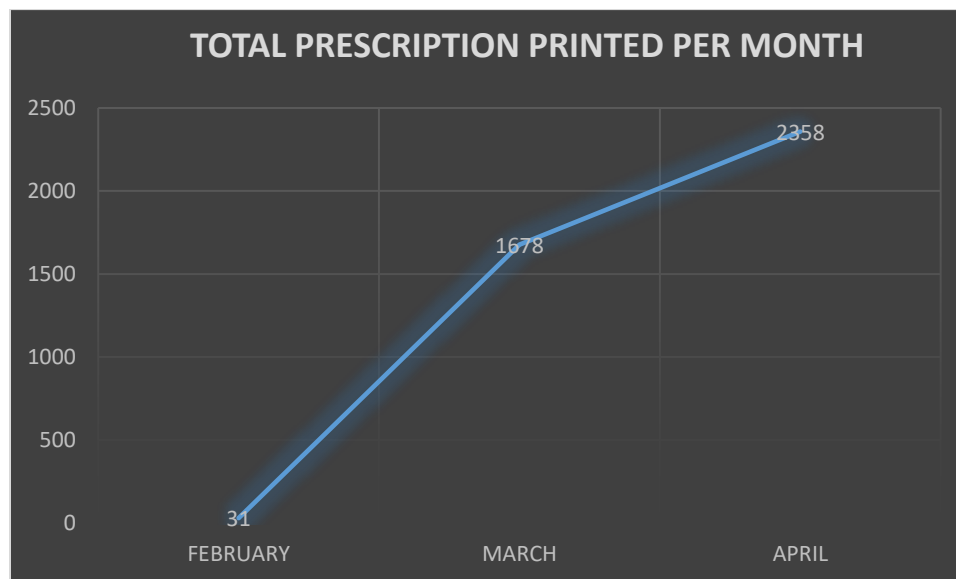


Fig no.19

RECOMMENDATIONS

1. Status of Cash Patients should reflect on OP Dashboard.
2. The process of typing “APD1.0010...” (Username) should be automatically set as a default rather than by entering the whole set.
3. File Format such as “.pdf” should be enabled at attachment option towards uploading of the file.
4. Under Medicines Options “Generic Name” are different from listed medicines. Same needs to be Updated.
5. Connectivity Issues should be resolved.
6. Options like “Click Here for parameters, Click Here for Global parameters & Swap template should be removed from patient landing screen.
7. Auto text option should be there for easy work.

ANNEXURE

	Quick Reference Guide For Digital OP / IP for MED MANTRA	
	For OPD	For IPD
	(To be Used in OPD)	(To be Used in Wards)
1	Login Medmantra DNA with your Login ID	Login Medmantra DNA with your Login ID
2	Update Doctor Status as "IN"	Update Doctor Status as "IN"
3	Click "Out Patient" on top right of the options panel	Click IP Dashboard on top row
4	Fill the Mandatory Parameters: ➤ Allergies	Click All Patients/My Patients to consult as per daily admission logs
5	Print OP Summary	Initiate & Finalize Discharge Summary

QUESTIONNAIRE

<u>S.No</u>	<u>Questions</u>	<u>Likert Scale</u>			
		Strongly disagree	Disagree	Agree	Strongly agree
1	EMR user friendly or easy to use				
2	EMR Screen layout are acceptable				
3	EMR provides updated information				
4	EMR fonts and characters are easy to read				
5	EMR performance speed is acceptable				
6	Using EMR decreases time spent by patients				
7	EMR improves the quality of patient care process				
8	EMR improves the quality of patient data and retrieval				
9	I am satisfied with layouts of printed prescription				
10	Overall, I am satisfied with EMR				

CONCLUSION

At Apollo, the financial year 2016-2018 marked the commencement of EMR (electronic medical record) to digitalize and provide the consultant ease of operations at their chambers. To widespread the process and to bring the process into practice, infrastructural upgrading,bridging technological gaps, identifying the challenges, navigating the available resources, drafting the various requirements and thus making reality into success stories is where Apollo has taken a stand to change.

The initial monitoring has shown positive growth chart wherein satisfaction rate in terms of accepting the application as user- friendliness and ease to use is being rated. The strategy to move from volume to value and ability to bear risk on all fronts is being calculated on a timely basis.

Stating so conclude the initiatives taken by Apollo to move towards digitization and make it a better patient welfare organization, all efforts are being maximized to move toward one goal.

LET'S MAKE SMART APOLLO. LET'S ACCEPT THE CHANGE AND BRING THE CHANGE"

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