DISSERTATION TRAINING REPORT

at

MyHealthcare Technologies Pvt Ltd

on

Analyzing the factors affecting the acceptability of New MyHealthcare HIS system among the Nursing staff of a Renowned hospital in Udaipur

By

ABHIMANYU DABAS

Enroll No. - PG/21/142

Under the guidance of

Dr. Himanshu Tolani

Post Graduate Diploma in Hospital and Health Management

2021-23

International Institute of Health Management Research

New Delhi

The certificate is awarded to.

ABHIMANYU DABAS

in recognition of having successfully completed his

Internship in the department of

EMR & CLINICAL TRANSFORMATION

and has successfully completed his Project on

Analyzing the factors affecting the acceptability of New MyHealthcare HIS system among the Nursing staff of a Renowned hospital in Udaipur

on

20th May 2023

from

MyHealthcare Technologies 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 endeavors.

Dr. Poorva Nandedkar

(AVP- Clinical Transformation)

Kuntal Sinha Roy

(AVP-Human Resources)

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **ABHIMANYU DABAS** student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at **MyHealthcare Technologies Pvt Ltd** from 20th February 2023 to 20th May 2023.

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

The Internship is in fulfillment of the course requirements.

I wish him all success in all his/her future endeavors.

Dr. Sumesh Kumar
(Associate Dean, Academic and Student Affairs)
(IIHMR Delhi)

Dr. Himanshu Tolani
(IIHMR Delhi)

CERTIFICATE OF APPROVAL

The following dissertation titled **Analysing the factors affecting the acceptability of New MyHealthcare HIS system among the Nursing staff of a Renowned hospital in Udaipur.** at **"My Healthcare Technologies 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 the 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.

Name

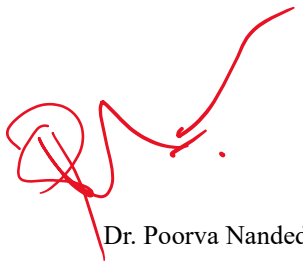
SHASHI BHUSHAN GOGIA

Dr. Pankaj Talreja

Signature

CERTIFICATE FROM DISSERTATION ADVISORY COMMITTEE

This is to certify that **Mr. Abhimanyu Dabas**, a graduate student of the PGDM (Hospital & Health Management) has worked under our guidance and supervision. He is submitting this dissertation titled "**Analyzing the factors affecting the acceptability of New MyHealthcare HIS system among the Nursing staff of a Renowned hospital in Udaipur**." at "**MyHealthcare Technologies Pvt Ltd**" in partial fulfillment 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.



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INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH,

NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "*Analyzing the factors affecting the acceptability rate of New MyHealthcare HIS system among the Nursing staff of Paras Hospital, Udaipur.*" and submitted by **Abhimanyu Dabas** Enrollment No. **PG/21/142** under the supervision of **Dr Himanshu Tolani** for award of PGDM (Hospital & Health Management) of the Institute carried out during the period from **February 2023** to **May 2023** 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

FEEDBACK FORM

Name of the Student: **ABHIMANYU DABAS**

Name of the Organization in Which Dissertation Has Been Completed: **My Healthcare Technologies Pvt Ltd**

Area of Dissertation: **EMR & Clinical Transformation**

Attendance:

Objectives achieved:

1) Grasping HIS, EMR solutions
2) Pre implementation training &
3) Implementation.

Deliverables:

→ Implemented EMR in a hospital
→ Training of end users

Strengths:

1) Communication
2) Quick Learner.

Suggestions for Improvement:

1) Taking ownership and extended responsibility will help you grow further.

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):

1) Keep abreast with recent trends in market.
2) When a specialization like Health IT is introduced, it will help if trainings are provided on applications / DB. / that are of practical use.

Dr. Poorva Nandedkar

AVP- Clinical Transformation

Date: 5/6/23

Place: Pune

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I am extremely thankful to everyone at **MyHealthcare Technologies Pvt Ltd** for sharing generously their valuable insight and precious time which motivated me to do my best during dissertation.

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Signature

(Abhimanyu Dabas)

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ORGANIZATION PROFILE

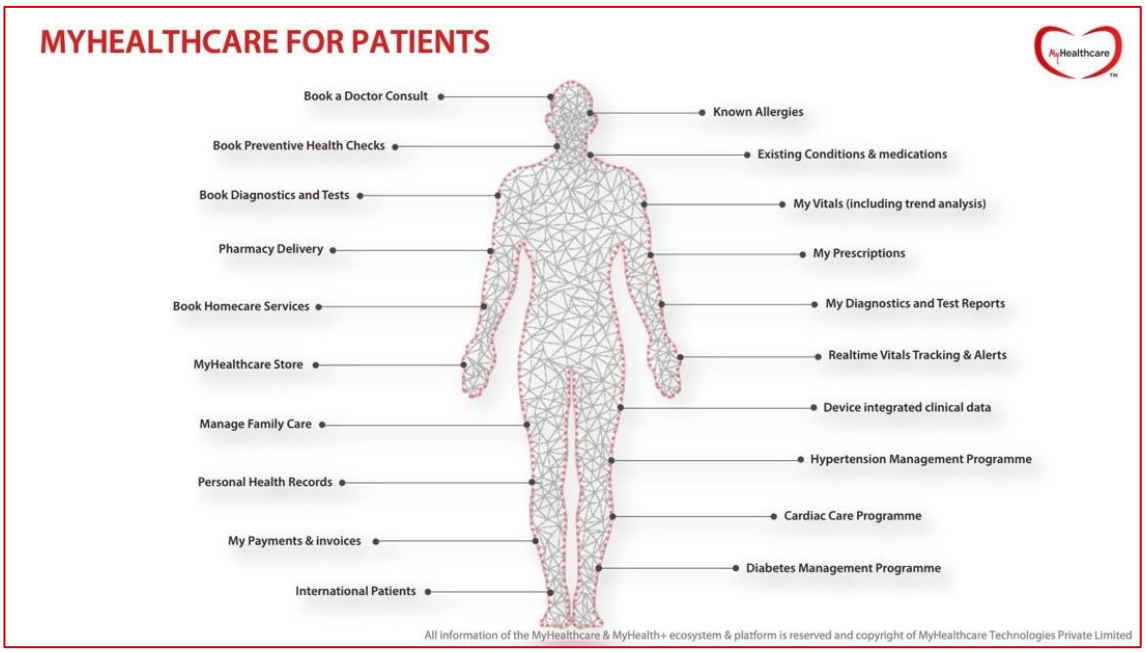
INTRODUCTION-

MyHealthcare Technologies is a digital health tech company, that works with hospitals, clinics in building out an integrated, digital patient care ecosystem – with patient centric care delivery at its core, the platform builds a complete healthcare ecosystem around a patient or their families across doctor consultation (physical or virtual), diagnostics health, vaccination programs and more. MyHealthcare works to bridge the healthcare delivery gap using the latest advancements in digital technology and offers a data driven care continuum process. The ecosystem helps in building a structured repository of a patient's clinical data and a patient longitudinal history, across all interventions and services offered through the MyHealthcare Ecosystem. MyHealthcare is headquartered in Gurgaon (Delhi NCR), with its technology centers in Bangalore and Dehradun. It has sales offices across India, Malaysia, Thailand, Singapore, Indonesia, Philippines, Vietnam, and Hong Kong.

MyHealthcare's digital healthcare ecosystem enhances patient engagement and empowers them with the healthcare needs for themselves and their families. The platform is integrated into a 360-degree clinical management system for doctors and nurses, which includes a practice management platform, patient management platform, EMRs for OPD and specialty EMRs for General Physician / Internal Medicine, Pediatrics, Endocrinology & Cardiology; with soon to be available EMRs for Obstetrics & Gynecology, Oncology, Dentistry, Ophthalmology and Neurology. The cloud-based solution allows clinicians, doctors, nurses to manage their patient's care through digital platforms such as web and mobile. A built-in virtual consultation platform allows doctors to consult their patients over a secure video or audio call, review the patient records and complete a prescription remotely. MyHealthcare's EMR ecosystem has been built in augmented intelligence and artificial intelligence to analyze a patient's clinical history, map diagnosis to globally accepted standards such as ICD-10 and SONMED-CT. Its proprietary voice.ai (clinically trained voice to text engine), allows doctors to dictate their clinical notes, patient records and helps improve their efficiency in managing patient care. The MyHealthcare ecosystem has an extensive library of care protocols and has mapped the core attributes for over 19,000 drugs. The availability of a patient's longitudinal history helps in the management of a patient's Emergency care needs. The integrated care platform helps in improving patient experience and delivers better clinical outcomes.

The MyHealthcare@Home ecosystem delivers connected care platform to manage patients from a centralized command Centre. The scalable platform can monitor a large pool of patients from a single location, including remote patient monitoring and home isolation monitoring.

MyHealthcare AI works with clinical data, treatment protocols and big data generated from its partner hospitals, to build augmented intelligence modules that work in identification of a diagnosis and offer a complete cure process protocol.



MYHEALTHCARE DOCTOR OPD EMR

The MyHealthcare Doctor Platform helps doctors manage their virtual consultation and OPD consultations seamlessly, from a user-friendly web or mobile platform. The MyHealthcare Doctor Platform is integrated with all clinical platforms of a hospital such as the Hospital Information System (HIS), Laboratory Information System (LIS), Radiology Information System (RIS) and Picture Archiving and Communication System (PACS). The MyHealthcare Doctor ecosystem is integrated with the MyHealthcare patient platform, MyHealthcare@Home platform, the Queue Management System and Doctor Referral platform.

The MyHealthcare Doctor EMR allows the doctor to view all patient demography details, test reports, clinical documents, patient uploaded documents, and patient notes uploaded prior to the consult. The doctor can use the platform to view the patient journey from the time they book an appointment, arrival at the hospital, their clinical assessment and delivery of an e-prescription. The MyHealthcare Doctor EMR is a cloud-based solution, using the best-in-class data security protocols, ready masters for drugs, tests, templates, copy from previous prescription and voice enabled. The **MyHealthcare Doctor Platform comes with**

Speech to Text EMR. This allows the doctors to dictate the prescription notes, medicines, and tests. The platform has been **launched for the first time** in India and is able to decipher clinical terms, medicine names, diagnostics tests, etc. By implementing EMR, patient data can be tracked and analysed over an extended period by associated healthcare providers. It also helps them to boost the quality and safety of patient care by implementing best practices such as care protocol and real-time clinical decision support system.

The MyHealthcare Doctor Platform helps providers better manage care for patients and provide better health care by:

- Providing **accurate, up-to-date, and complete information about patients** at the point of care
- Enabling quick access to patient records for more **coordinated, efficient care**
- Securely **sharing electronic information** with patients and other clinicians
- Helping providers more effectively **diagnose patients, reduce medical errors, and provide safer care**
- Improving patient and provider interaction and communication, as well as **health care convenience**
- Enabling safer, **more reliable prescribing**
- Helping promote **legible, complete documentation** and accurate, streamlined coding and billing.
- Enhancing privacy and security of patient data
- **Reducing costs** through decreased paperwork, improved safety, reduced duplication of testing, and improved health.

MYHEALTHCARE IPD EMR

EMR for In-Patient Department (IPD) manages hospital functions for admitted patients. Integrated firmly with the hospital HIS, LIS, PACS and other integral systems of the hospital. EMR IPD systematises processes related to the treatment.

Key components of IPD- EMR are mentioned below.

1. ***IPD- EMR for Doctors*:**
   - 1.1. **Order Management (CPOE):** Doctor can order, acknowledge result, and edit or cancel any order e.g., Lab test.
   - 1.2. Order sets for easy selection & placement of clinical orders
   - 1.3. Medication review – hold/ resume, stop or renew medication order.
   - 1.4. Core attributes mapped for over 19,000 drugs (with salt, strength, route, frequency, schedule, dose, and form)
   - 1.5. Allergy alerts: for any patient medication where there is an allergy to salt is highlighted to clinicians.
   - 1.6. Placement of diagnostics, radiology & procedure orders from masters
   - 1.7. Duplicate order alerts

1.8. LASA alerts for all medications
1.9. Substitute recommendation based on item nature and payor configuration.
1.10. View events of the past 24 hours
1.11. View laboratory and radiology report status. Radiology PACS images also on view as image
1.12. Patient longitudinal history view across all encounters (OPD, IPD, ER, Homecare)
1.13. Critical result / alert notification
1.14. Forms Builder (including progress notes), for creating customized forms.
1.15. **Medication Management:** Manages medication reconciliation and provides doctors with patient's drug history.
1.16. **Operation Theatre:** Schedule, reschedule or cancel patients' surgical processes.
1.17. **Clinical Notes:** Doctor can create, edit and delete clinical notes for patients. Additionally, he/she can view old notes details and form builders.
1.18. **Configuration to auto post Admitting practitioner visits, Referral visits based on note recorded.**
1.19. **Referral workflow**: Initiate, accept, forward and complete referral.
1.20. **Patient Discharge:** Doctor can initiate or cancel patient's discharge using this tool. It also highlights patient discharge timeline.
1.21. **SMART discharge summary which is configurable:** Doctor can define summary formats as they like. This allows summary to automatically populate as configured and eliminates the need to type it from scratch.
1.22. **Patient History:** Provides doctor with patient's history and allows him to view trend graphs of his ongoing or past treatments.
1.23. **ICD 10 Diagnosis –** full text search enabled ICD Codes based diagnosis recording.
1.24. **Alerts & Notifications –** Provides timely alerts based on a highly configurable notification engine.

2. ***IPD- EMR for Nurses*:**
2.1. **Order Management:** Nurse can view, track, amend and even cancel the orders. Access control based.
2.2. **Supplies:** Acknowledge, ward supplies, return or approve return of drugs
2.3. **Medication Administration Record:** EMR IPD allows nurses to administer medication records and perform below mentioned activities.
2.4. Administer Now
2.5. Delay the task.
2.6. Unable to Administer
2.7. Administer Missed Dose
2.8. Start Infusion
2.9. Complete Infusion
2.10. Change Infusion Rate
2.11. Administer from ward stock.

2.12. **Patient Discharge:** Give nursing clearance, view pending orders, view patient's discharge timeline, and send discharge cancellation intimations.

2.13. **Patient Transfer flow:** Transfer request, approval, transfer out and transfer in

2.14. **Operation Theatre:**

2.15. Prepare transfer for procedure.

2.16. Prepare transfer checklist.

2.17. Surgery Request

2.18. Schedule or reschedule surgery.

2.19. Check-in to OR

2.20. Surgery Timeout

2.21. Operative Notes, Anesthetist's Notes, Nursing Notes

2.22. Surgical Safety Checklist

2.23. Checkout from OR

2.24. Ward transfer port surgery

2.25. **Charting:** Vital, I/O charting and ICU charting.

2.26. **Notes:** Can create, edit, and delete clinical notes for patients. Additionally, he/she can view old notes details and form builders.

2.27. **Blood Transfusion: Complete transfusion and activities related to blood transfusion such as.**

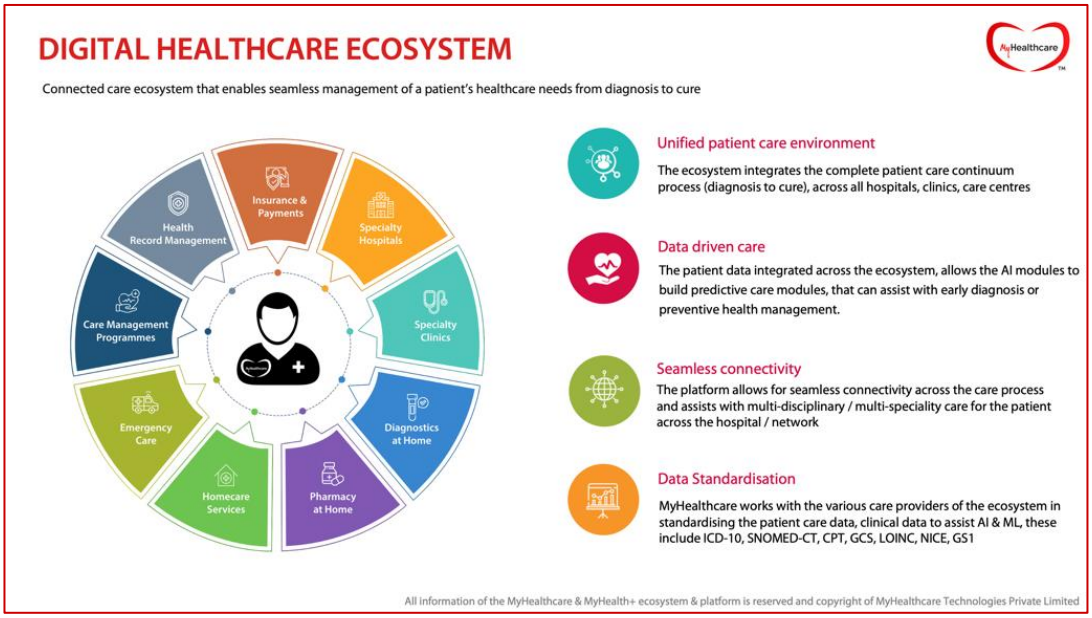
2.28. Barcoded Initiation of Blood Transfusion

2.29. Complete or Stop Transfusion

2.30. Adverse Events

2.31. Return Blood Bag

2.32. View Order Detail



"Analyzing the factors affecting the acceptability of New MyHealthcare HIS system among the Nursing staff of a Renowned hospital in Udaipur."

INTRODUCTION

Hospitals in today's times are one of the most important parts of our society, considering it as the place of healing, the public finds solace within these places. Considering the importance of such institutions, it becomes their responsibility as well to provide the seekers with the best level of services. In a competitive era like todays, the Hospitals are always in this quest to provide their customers with best-in-class healthcare services, because not just this improves their visibility among the masses, but also make them stand apart from the other competitions.

In a generalized view, we can see that there are more than 100 private medical institutions, out of which only a few are popular among the masses. Is there any reason for that. For a patient healthcare is of the utmost priority but the non-clinical services which are being provided to the patient are also of due importance to them. The patient expects to get a seamless and hassle-free transition through the various departments of the hospitals, because the time and comfort of the patient is also of the utmost importance.

If we look at a hospital then we shall find that a hospital is an amalgamation of various departments, not just the clinical part we are talking about but the non-clinal part as well, because their importance can be equated to their partner departments. You shall never find any action in the hospitals happening without the billing or financial department approving it. This is where the healthcare industry has successfully integrated technology to provide seamless and hassle-free services to their patients.

Health is a very important part of our society. Hospital Management information system (HMIS) or Hospital Information system (HIS) is a comprehensive, integrated management system, tasked to manage all the different departments and aspects of the hospital and its operations like medical, administration, financial and legal issues, and the corresponding services. The HIS provides a common source for a patient's health history, doctors schedule management and slot booking.

Unlike the pen-paper system an electronic system can manage and keep the patient data and other confidential information secure. It can substantially

manage the data more efficiently. The HIS enhances the ability of the HCP (Health Care Professionals) to co-ordinate care by providing a patient's health information and visit history at the place and time that it is needed.

The system is also capable of working with the various laboratory and radiology related management systems, hence providing seamless and hassle-free interoperability of the data.

Now when we talk about HIS, then there are several parameters which are considered so that the HIS can be selected for a hospital. Not just the parameters, but these are the advantages that the hospitals receive after implementing a Information system. We should not forget that the HIS is not only for the Clinical departments but also for the non- clinical departments as well, this makes a streamlining of the process.

Few advantages are as follows:-

1. Higher revenue management
2. Enhanced clinical decision making.
3. Making the facility technologically advanced
4. To provide data privacy
5. Eliminating errors
6. Monitoring each detail instantly
7. No chances of errors, also helping to reduce the medical negligence errors.
8. Increased data retrieval ability
9. Enhanced efficiency of patient care
10. It is an affordable solution for the hospitals.

With further development in technology, we are also seeing a new avatar of HIS which comes quite handy to the HCPs, as a mobile application. Several hospitals and the manufacturers are downsizing the system to allow the HCP to carry the HIS system around while on a round.

This provides them with a cheaper and more comfortable way of using the HIS. Now this functionality is only available for the clinical department, but with further developments, we expect the non- clinical also to follow suit.

Earlier the tons of paperwork that each department had to do, to maintain their record, could be used for further audit-related parameters.

While enabling the hospital and strengthening the quality of care provided to the patient, here are some *perspectives* that should be considered about the HMIS system.

- **Patient Management**: HIS provides a unified platform to manage patient registration, scheduling, and tracking. It allows healthcare professionals to access patient demographics, medical history, test results, and treatment plans, facilitating accurate diagnosis and personalized care.

- **Clinical Documentation**: HIS enables electronic health record (EHR) management, replacing traditional paper-based records. It allows doctors and nurses to capture and store clinical data, including progress notes, prescriptions, lab results, and imaging reports. This improves information sharing, reduces errors, and enhances continuity of care.

- **Workflow Optimization**: HIS automates various administrative tasks such as appointment scheduling, billing, and inventory management. It helps streamline workflows, eliminate redundancies, and optimize resource allocation, resulting in increased operational efficiency and cost savings.

- **Decision Support**: HIS often includes decision support tools that provide healthcare providers with real-time information and clinical guidelines. It helps doctors in making informed decisions regarding diagnoses, treatment plans, and medication choices, based on evidence-based practices and patient-specific data.

- **Interoperability**: Modern HIS systems emphasize interoperability, allowing seamless exchange of data with other healthcare systems and external entities. This promotes care coordination, facilitates referrals, and enables integration with external laboratories, pharmacies, and insurance providers.

- **Data Analytics**: HIS collects and stores vast amounts of healthcare data, which can be analyzed to derive meaningful insights. By leveraging analytics capabilities, hospitals can identify trends, patterns, and potential areas for improvement in patient outcomes, operational efficiency, and resource utilization.

- **Patient Engagement**: Some HIS systems offer patient portals or mobile apps that enable patients to access their health information, schedule appointments, request prescription refills, and communicate with healthcare providers. This promotes patient engagement, empowers individuals to actively participate in their care, and enhances patient satisfaction.

- **Regulatory Compliance**: HIS systems are designed to meet regulatory requirements and maintain data privacy and security standards. They support compliance with standards such as Health Insurance Portability and Accountability Act (HIPAA) in the United States, ensuring patient confidentiality and data protection.

While hospital information systems (HIS) offer numerous benefits, they also have some limitations. Here are a few common *limitations* associated with HIS:

- **Cost**: Implementing and maintaining a robust HIS can be expensive. Hospitals need to invest in hardware, software licenses, infrastructure upgrades, and ongoing technical support. Smaller healthcare facilities with limited budgets may find it challenging to afford a comprehensive HIS solution.

- **Complexity**: HIS implementation requires careful planning and coordination across various departments and stakeholders. It involves significant changes in workflows and processes, which can be complex and time-consuming. Training staff to use the new system effectively can also be a challenge, leading to a temporary decrease in productivity during the transition phase.

- **Data Quality and Integrity**: HIS relies on accurate and complete data to deliver optimal results. However, data entry errors, inconsistent documentation practices, and duplicate records can compromise data quality. Inaccurate or incomplete information can lead to incorrect diagnoses, treatment errors, or compromised patient safety. Regular data quality checks and staff education are essential to mitigate these risks.

- **Interoperability Challenges**: While interoperability is a key goal of HIS, achieving seamless data exchange between different systems and organizations can be challenging. Different HIS platforms may

use proprietary data formats or communication protocols, making data sharing and integration complex. Interoperability standards and interfaces, such as Health Level 7 (HL7) or Fast Healthcare Interoperability Resources (FHIR), are evolving to address these challenges, but full interoperability is not yet universal.

- **Data Security and Privacy Concerns**: With the digitization of healthcare data, the risk of data breaches and unauthorized access increases. Protecting patient privacy and maintaining data security are critical aspects of HIS implementation. Hospitals must implement robust security measures, including encryption, access controls, and regular audits, to safeguard patient information.

- **System Downtime and Technical Issues**: Like any technology, HIS systems can experience technical glitches or downtime. Hardware failures, software bugs, or network disruptions can interrupt system availability, affecting critical healthcare operations. Hospitals need to have contingency plans, backup systems, and skilled technical support to minimize the impact of such issues.

Artificial Intelligence (AI) plays a significant role in enhancing hospital information systems (HIS) by leveraging advanced technologies to improve patient care, operational efficiency, and decision-making processes. Here are some key areas where AI intersects with HIS :

- **(CDSS)Clinical Decision Support**: AI-powered algorithms can analyze large volumes of patient data, including medical records, test results, and clinical guidelines, to provide clinicians with real-time decision support. AI can help identify patterns, predict outcomes, and suggest optimal treatment options, leading to more accurate diagnoses and personalized care plans .

- **Predictive Analytics**: By utilizing machine learning algorithms, HIS can leverage historical patient data to predict health outcomes, identify high-risk patients, and detect early warning signs of conditions such as sepsis or readmissions. This enables proactive interventions and preventive measures to improve patient outcomes and resource utilization.

- **Image and Diagnostics Interpretation**: AI algorithms can analyze medical images, such as X-rays, CT scans, and MRIs, to assist

radiologists and pathologists in detecting abnormalities, tumors, or other conditions. AI can quickly process large image datasets, aiding in faster and more accurate diagnosis.

- **Virtual Assistants and Chatbots**: AI-powered virtual assistants and chatbots can support patients by answering common inquiries, scheduling appointments, and providing basic medical advice. They can alleviate the burden on administrative staff and improve patient engagement and satisfaction.

- **Revenue Cycle Management**: AI algorithms can assist in automating billing and coding processes, flagging potential errors, and identifying missed revenue opportunities. This reduces administrative burdens, enhances accuracy, and speeds up the reimbursement process.

- **Resource Optimization**: AI can help hospitals optimize resource allocation, such as staff scheduling and inventory management, by analyzing historical data, patient demand patterns, and operational factors. This leads to better resource utilization, reduced wait times, and improved overall efficiency.

- **Personalized Medicine**: AI can analyze patient-specific data, including genetics, lifestyle factors, and treatment responses, to support personalized medicine. This enables healthcare providers to tailor treatment plans and interventions based on individual characteristics, leading to better patient outcomes.

It's important to note that the integration of AI in HIS requires careful consideration of ethical and regulatory aspects, such as data privacy, bias mitigation, and transparency in algorithmic decision-making. Ensuring that AI systems are validated, secure, and aligned with best practices is crucial for successful adoption in healthcare settings.

Literature Review

Literature Review is a very important step that must be conducted to not just get a healthy perspective regarding the topic but also to know regarding the road ahead to be taken.

For any Primary Work, literature review becomes a guidance and something to look up to before you start.

A. M. Mahla, S. Talati, A. K. Gupta, R. Agarwal et al in 2021; This study's objective was to determine how well-liked HMIS was by nursing administrators at a teaching hospital. Using a pretested questionnaire, this cross-sectional study was carried out over the course of a year in a teaching hospital in northern India. It adopted a purposive sampling, and the study subjects were nursing officers who were not on probation. Nearly half of all participants were highly accepting of the HIMS system, which may be explained by their job profiles, distribution of working locations, and prior HMIS experiences.

B. C. Pichaandy, C. Sriram, et al in 2022; An observational study with the goal of demonstrating the significance of education in predicting HMIS adoption by healthcare workers at the main hospital and dispensaries of Employees State Insurance Corporation (ESIC). 171 healthcare professionals were given the survey questionnaire to get their opinions on whether or not the Health Management Information System (HMIS) should be used. This observation at the ESIC main hospital and the dispensaries in the Tirunelveli sub-region demonstrates how the educational background of the HCPs has a significant impact on the adoption of HMIS. In a developing nation like India, maintaining a robust HMIS is crucial for an efficient healthcare system.

C. N. Kusum, Sarita, M. George, et al in 2021; In order to gather data about Knowledge, Practices, Attitude, Usability, and Satisfaction related to Existing HIS, a Descriptive Cross-Sectional Study was conducted among the Nurses in Wards, ICUs, and Emergency Department at ILBS, New Delhi. Data was collected using a Structured knowledge questionnaire, Practices checklist related to documentation, and Questionnaire for user Interface satisfaction. To analyze the data, descriptive and inferential statistics were employed. According to the survey, nurses had average expertise, good documentation habits, and a positive attitude towards HIS, but they

were least satisfied with the system's pace. However, there was significant overlap in documentation procedures, and nurses appeared to be unhappy with the system.

D. S. Tabibi, P. Ebrahimi, M. Amiri, M. Fardid, et al in 2018; A cross-sectional, descriptive-analytical survey was done to talk about and evaluate the new HMIS system. Due to the quick advancements in information technology, healthcare systems, and patient care, HIS are still in their infancy and development in Iran. As a result, HIS should have strong support on all fronts, including those of the economy, politics, society, culture, and law. The study had a sample size of over 400 participants, and it can be deduced that identifying organizational culture factors influences users' willingness to use Hospital Information System. This point can assist managers and decision-makers in the studied hospitals in using the system more thoroughly and effectively.

E. M. Farzandipur, E. Azimi, F. Rangrez Jeddi, et al in 2017; The study group included staff from the nursing unit, department secretaries, reception, medical records, clinical laboratories, radiology departments, pharmacies, and finance departments of hospitals that have been using comprehensive hospital information systems for at least two years in their facilities. According to scientific methodology, 400 participants made up the sample size. The adoption and successful deployment of hospital information systems are primarily influenced by human factors, such as computer skills, perceptions of usefulness, and perceptions of the ease of use. After that, technological elements become more important.

METHODOLOGY

Methodology refers to the specific techniques and approach used to collect and analyze the data directly from the source. It involves designing a research plan, selecting appropriate methods, and implementing them to gather unique and original information to address a specific research objective.

This study is a *Primary Research* study, primary research refers to the collection of original data directly from the source to address a specific research question . It involves gathering firsthand information by conducting surveys, interviews, observations, experiments, or focus groups.

Research Question- Analyzing the factors affecting the acceptability of New MyHealthcare HIS system among the Nursing staff of a renowned hospital in Udaipur.

Study Design- It is a *Observational study*, as we know that a observational study is a type of research design in which researchers observe and analyze individuals or groups to understand and describe their behaviors, characteristics, or outcomes. More importantly it is a Cross-sectional study.

Sampling Method- The sampling method is *Convenient Sampling*, because here the most accessible and understanding member of any hospital is its nursing staff, and upon observing it was also evident that the nursing officers will be the one using the HIS the most, whether in OPD or IPD.

Location of the Study- A renowned private hospital in Udaipur, where the new MyHealthcare HIS system was being implemented.

Targeted Group- Nursing Officers of the renowned hospital in Udaipur.

(Total nursing staff= 162; Total Number of participating Nursing Staff= 151)

Study Period- The study period was from 10th of March 2023 till 16th of April 2023. During which time I was part of the Training and Implementation team for the Clinical part of the HIS.

Research Instrument- A survey has administered semi-structured questionnaire. Participants were surveyed through a *Google Form* and the survey was sent through WhatsApp.

Ethical Considerations- All information gathered will be kept private and used solely for the purposes of this study; no data will be misused. As a researcher, I made the participant understand and explain to them in the language they understand. After explaining them, consent was taken. For the participants filling the Google Form themselves, a question of consent has been added to the survey, before they could answer the next question. Privacy and data protection will be strictly followed.

RESULTS

Before we start to discuss about the observations and the results that were fetched from the study area, we must consider the Primary and Secondary Objectives:

PRIMARY OBJECTIVE- To understand the perception of the HIS system among the nursing staff and to analyze the factors affecting this rate.

SECONDARY OBJECTIVE- To understand the level of help an HIS system provides to the hospital in its clinical process.

In order to get a good perspective and also to attain some value for these two objectives, two Semi-structured questionnaire were framed that were circulated among the study participants at different interval of time, One was during the end of the training period and the other one was after the implementation of the HIS system was done, and the hospital was couple of days into using the new system.

To check up with the timeline, during the implementation of the new system the hospital, first few weeks were devoted to extensive training of the nursing staff and the doctors.

These training sessions were conducted and overlooked by me and the respected Nursing Superintendent. I was responsible for the clinical training part.

For the Doctors training it was a brief training regarding the OPD EMR, and its workflow, the doctors were very interested in learning the new system, because the OPD EMR was being deployed there for the first time.

On the other hand, the Nursing staff of the hospital had to be given a full and extensive training and workflow training of the OPD EMR, IPD EMR and OT EMR. The nursing staff had sessions throughout the day. In the very start it was the looking and learning phase. The nursing staff was made clear about the workflow and the working of the System. All the steps that they had to follow to administer the patient with any medicine or recording the patient's vitals, all of this was explained to them theoretically first.

The next step was hands-on training, in this every nursing staff was given the opportunity to play around with the system from the trainer's laptop or system. Several tasks were assigned to them which they performed in front of the trainer, so that if there is any query or doubt then it could be solved on the spot. This exercise was also conducted throughout the day. With every shift the nursing staff were invited to try the system practically before the system could go-live.

The last phase of the training was to provide system access to the nursing staff from their respective nursing stations. Every nursing station had desktop (though not adequate) where the IT department of the hospital, provided them a dummy system to work on and understand its working before the system could go-live.

In this assessment form we are also looking for the experience a particular nurse has towards using the HIS system.

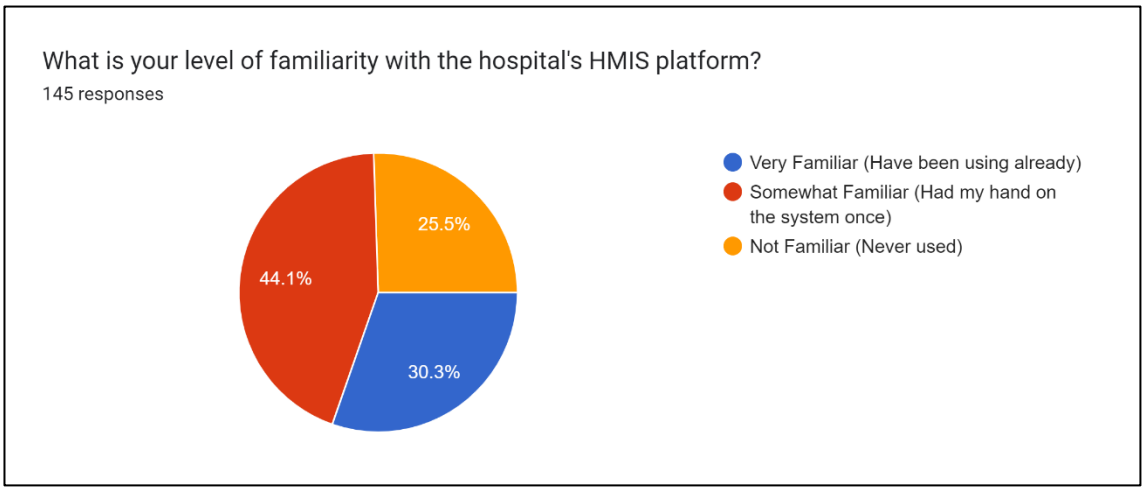
- So, let's first look at the demographic data that was fetched from the study site.

Age Group	Training Assessment	Post Implementation
20-30	91	92
30-40	43	43
40 & above	11	11

(Table 1)

(The majority of young nursing officers are more than that of older and experienced nurses.)

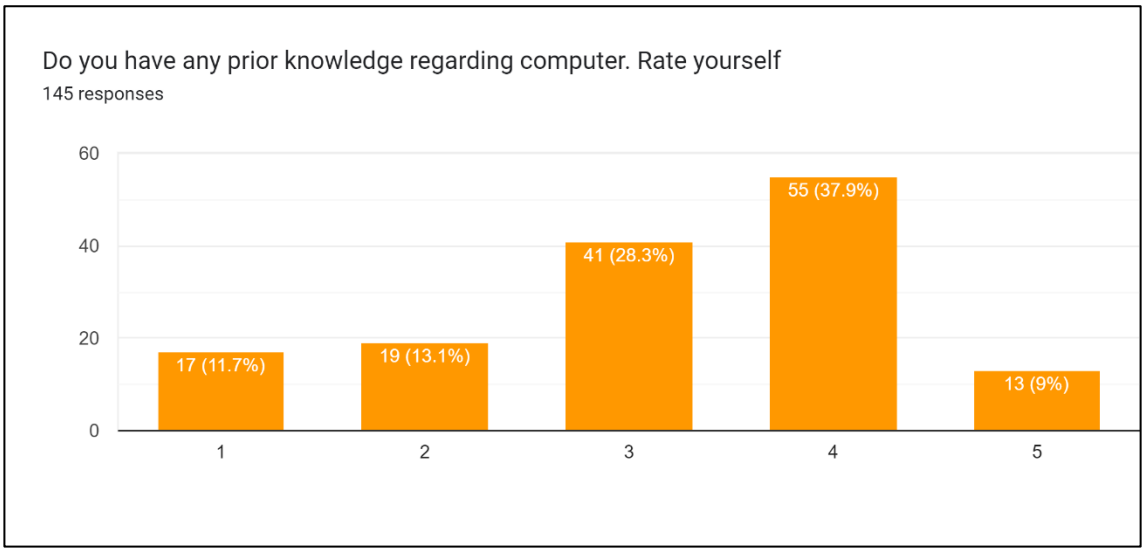
- Now the question was raised in front of the nursing officer, about the level of familiarity toward a HMIS system. The questions want to know about any experience that the staff hold of any other HIS system.
  (It is interesting to note that the hospital already had a running HIS system, which was being replaced by our System.)



(n=145, Very Familiar= 44, Somewhat familiar= 64 and Not familiar= 37) [Fig 1.0]

Here we can see that the majority of nursing staff say that they have had some experience in using the HIS system. Which is understandable because the hospital already had a HIS system.

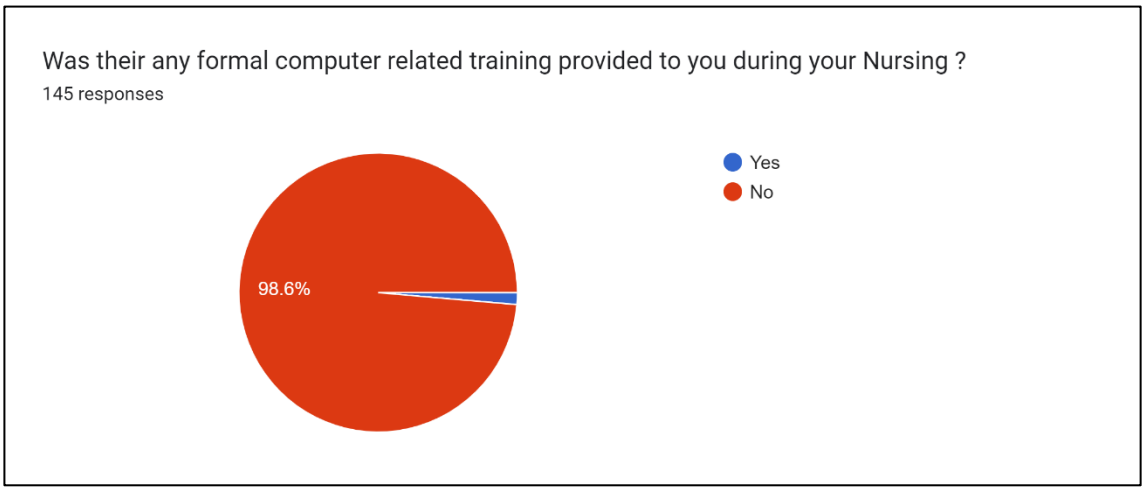
- Next the question was asked to infer about the level of knowledge the nursing staff had computers. Computer knowledge is also a major factor which can stop or dissuade a nurse from using a HIS.



(n= 145) [Fig 1.1]

Here we can see that a majority or a good number of nursing staff have a good knowledge of computers. Though we can see that there are 17 nurses which say that they know nothing about computers.

- Next question enquires about their education. The question is very specific and asks whether any kind of computer training was provided during their UG education. It was a simple Y/N question.

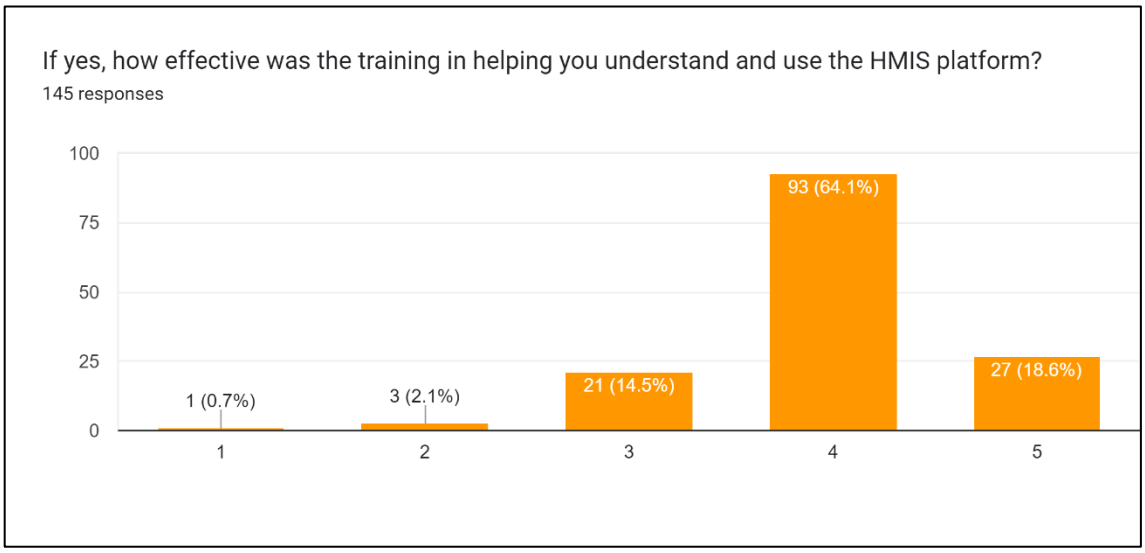


(n= 145) [Fig 1.2]

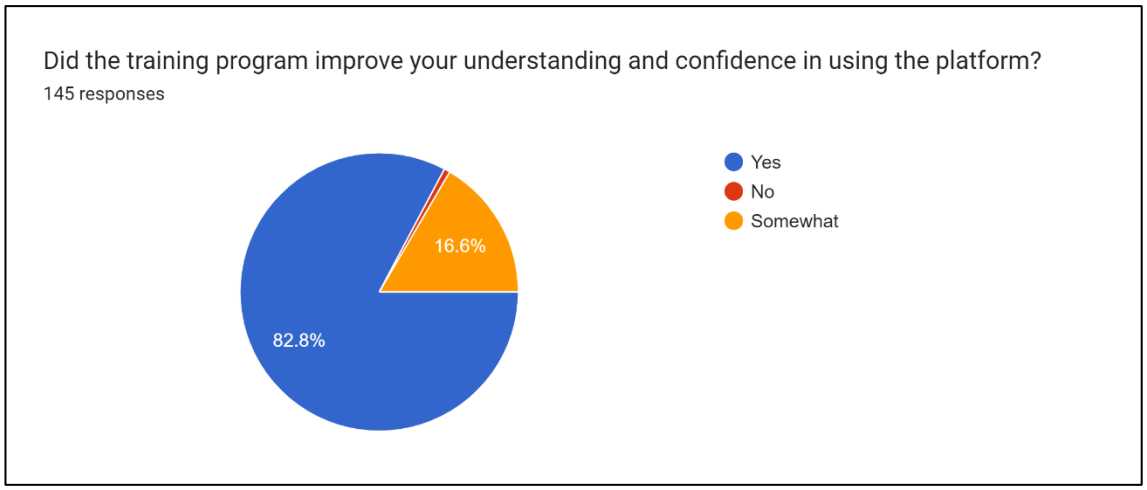
Unanimously we can see that the nursing staff has said No to this question. This makes it clear that the curriculum during nursing training and education doesn't include formal computer training.

(In order to increase the acceptability of HIS in hospitals both Government and Private, formal computer knowledge should be imparted within the nursing staff)

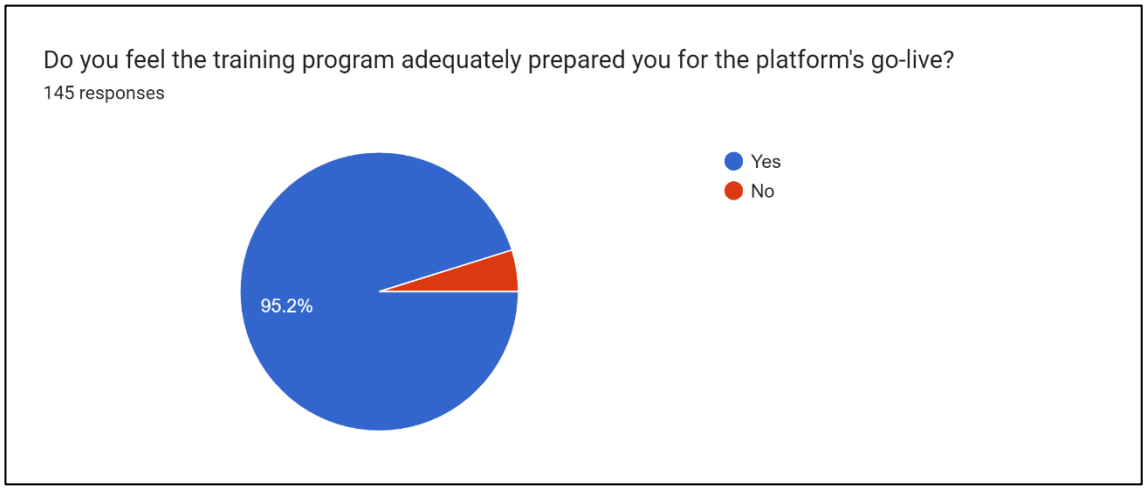
- Now the form proceeds towards knowing the nursing staff view about the training provided to them, specifically asking whether the training increased their confidence along with giving them clarity regarding the system.



(n=145) [Fig 1.3]



[fig 1.4]



[Fig 1.5]

The figures- 1.3, 1.4, 1.5, clearly depict the affirmative response of the nursing staff towards the training provided to them. All the sessions and the phase wise segregation of the session resulted in this affirmative response.

While literature review, we could see that every article, every research paper hinted towards the same factor for increased in acceptability, training for the new system.

During the discussion with the NS of the hospital, it was clear that the earlier system that was implemented didn't focus on the training part at all resulting in the nursing staff not using the system well.

Although confidential, according to the NS the approximate number that used the past HIS system had only 30% acceptability rate or usability.

As we can see in figure 1.5, more than 90% of nursing staff feel confident of the system, before the go-live period.

As discussed earlier the MyHealthcare enterprise application provides its user with plethora of features, hence it was my curiosity to ask them about their favorite feature within the system.

- Total answers received were 21, and of these 21 responses 15 said that the **speech to text** voice recording feature was the best.

The speech to text feature is what makes MyHealthcare Enterprise application different from others.

After the training phase comes the Implementation phase.

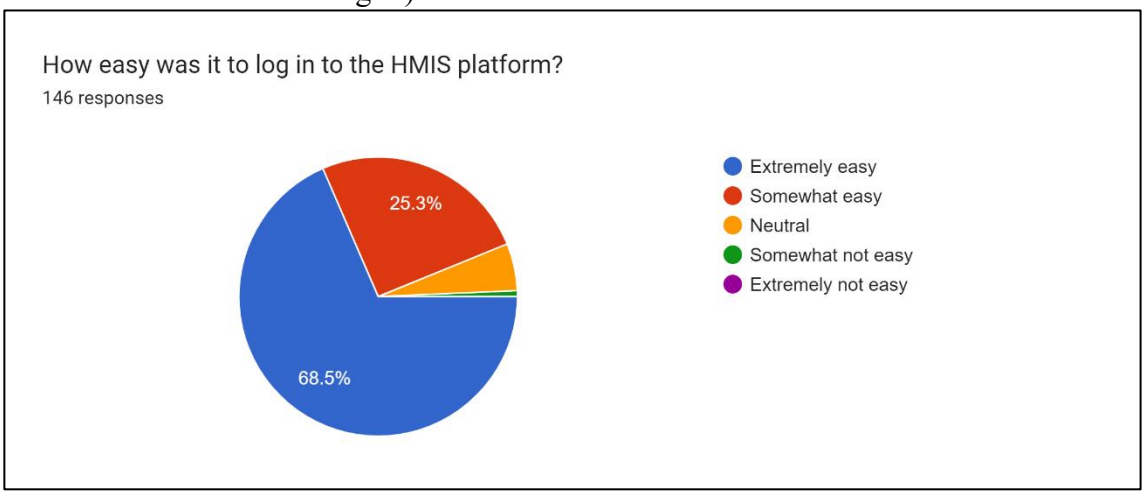
- During this phase our team was responsible for hearing, listening, and resolving every bug or blocker the user faced.
- If there was some issue that we could not solve from the front end, then the back-end developer was contacted and then they would resolve the issue and provide us with the solution.
- After some time, the platform becomes stable, and the user gets the hang of it.
- It takes just a week's time for the interoperability to set in the system.

Now when the users were ready, I circulated the second part of the questionnaire, that is the post implementation questionnaire, which understands about the problems or the advantages that the user is facing while using a new system.

Now in the post implementation, we have been putting some questions to the participants, i.e., the nursing staff of the hospital. These questions generally include the best feature that the MyHealthcare Enterprise Application provides to its user, like the option to favorite the diagnosis or the medicine etc. the speed of the system and the most important the voice to text feature, these were the focus area of the system.

Now looking at the post implementation questionnaire responses.

- We asked the participants whether they find it easy to log in to the new system or not. (Reason- many systems have more than 3 click for it to enter in the system, whereas the MHEA system depending on the user role, provides minimum 2 click log in)

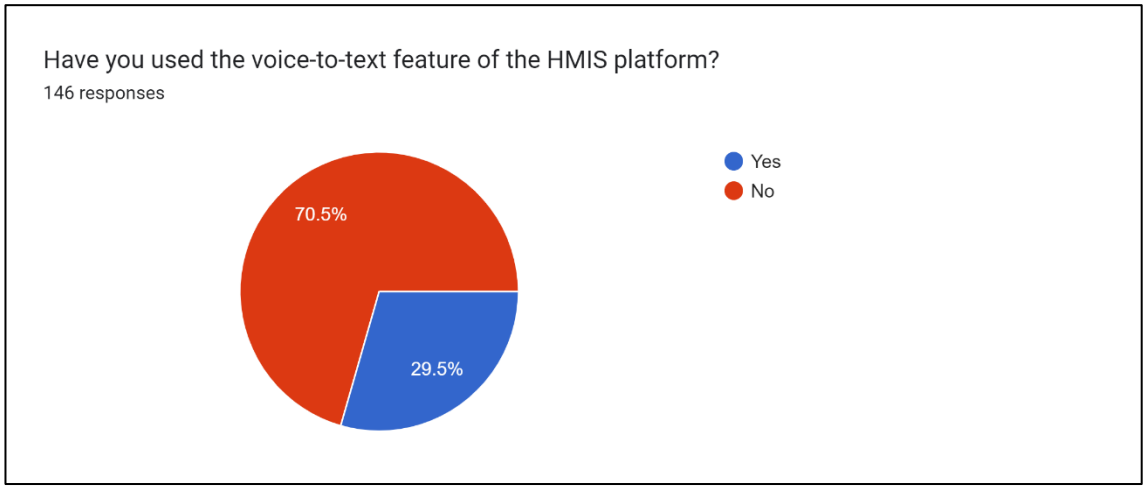


(Fig 2.0) (n=146)

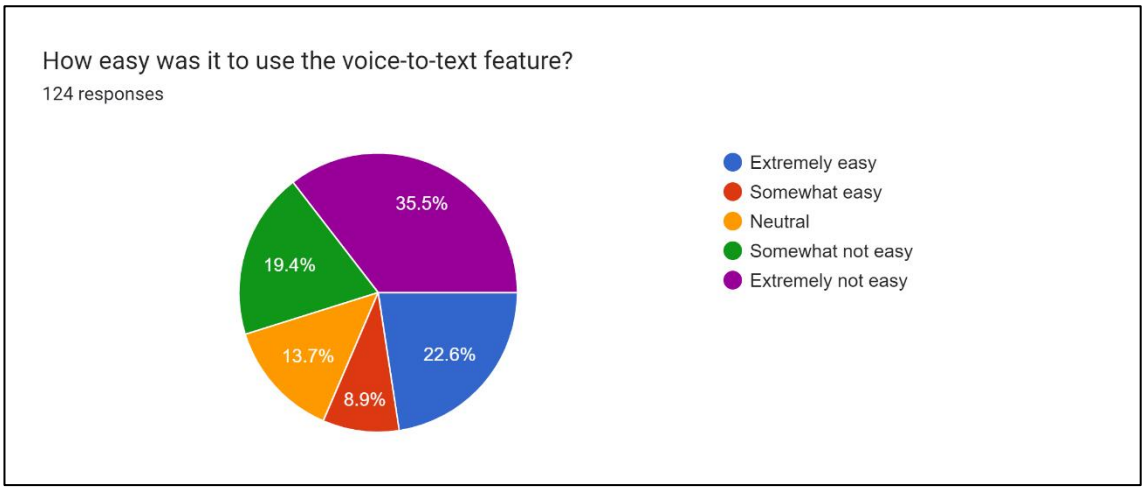
The data clearly shows that more than 65% of the respondents found it extremely easy to log into, whereas more than 25% found it easy to log into the system, this clearly shows that the system's very first impression on the user is great.

The less the number of clicks the more efficiently the user can perform his or her tasks.

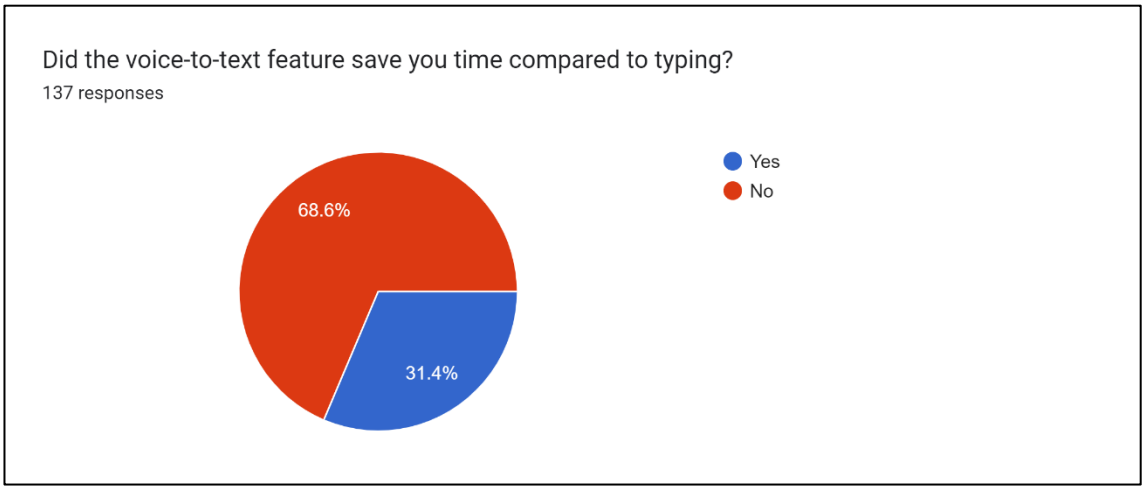
- Now we asked participants to answer questions related to their most loved and shorted after feature of the MHEA system, which is the voice to text feature.



(Fig 2.1)



(Fig 2.2)



(Fig 2.3)

In the turn of events the response towards the most anticipated feature of the MHEA system was the most negative.

In Figure- 2.1, 2.2, 2.3; the users were not able to use the feature.

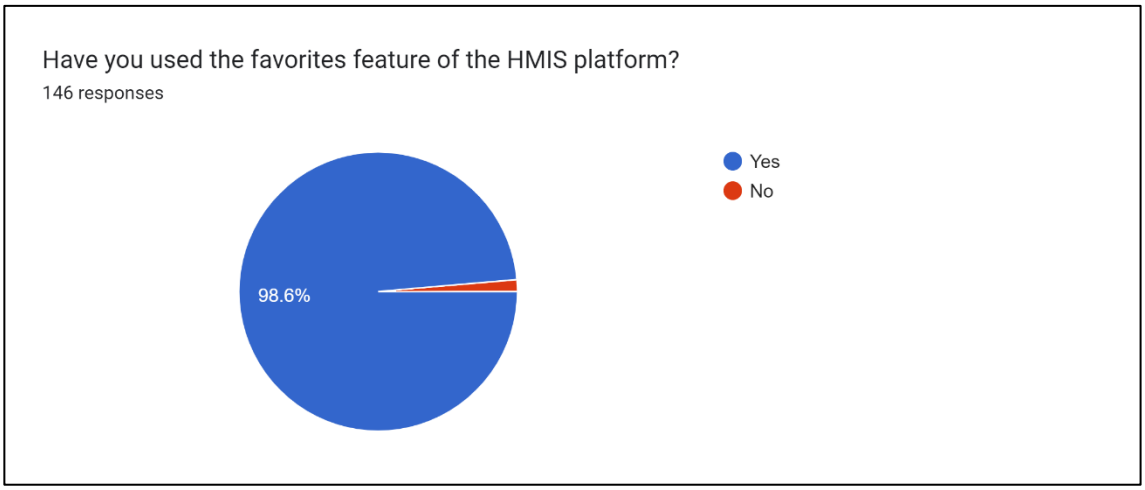
Here are few points that we should keep in mind before analyzing this response.

1. The Voice to text feature is provided to eliminate the use of keys, and subsequently reduce the time and number of clicks.
2. The voice to text feature is Artificial Intelligence enabled which means it can recognize your voice, but for that you need to feed in the feature with your voice, which means that after few days of using this application only then can it function appropriately.
3. The Voice to text feature can only be used in a compatible computer, desktop, or laptop.

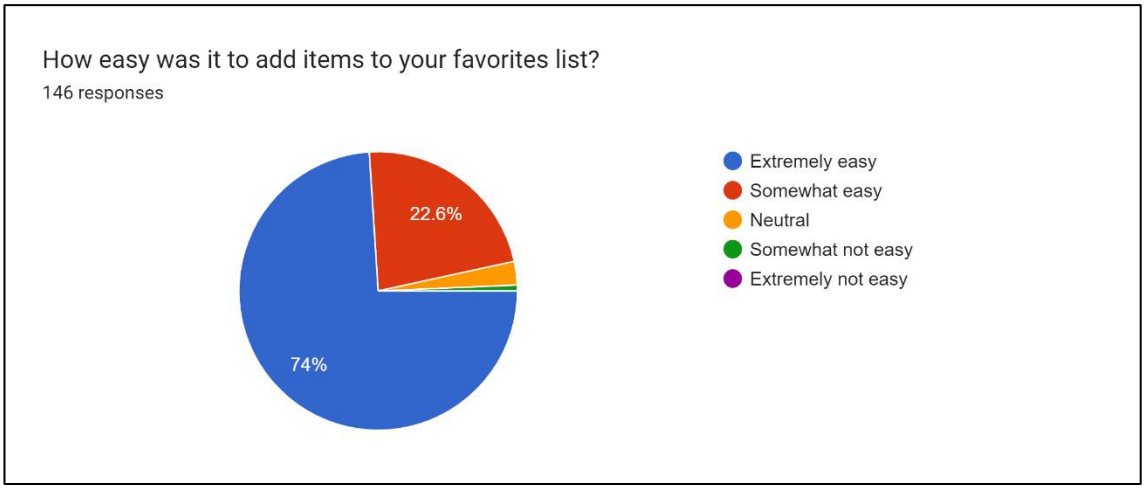
These are a few criteria that is supposed to be fulfilled in order to operate the Voice-to-text feature efficiently.

Now after discussion and observing the Hospital infrastructure and hardware, it was clear that the IPD EMR and the OT EMR did not have compatible hardware for this feature to be used. Hence, we see such a drastic change in these responses.

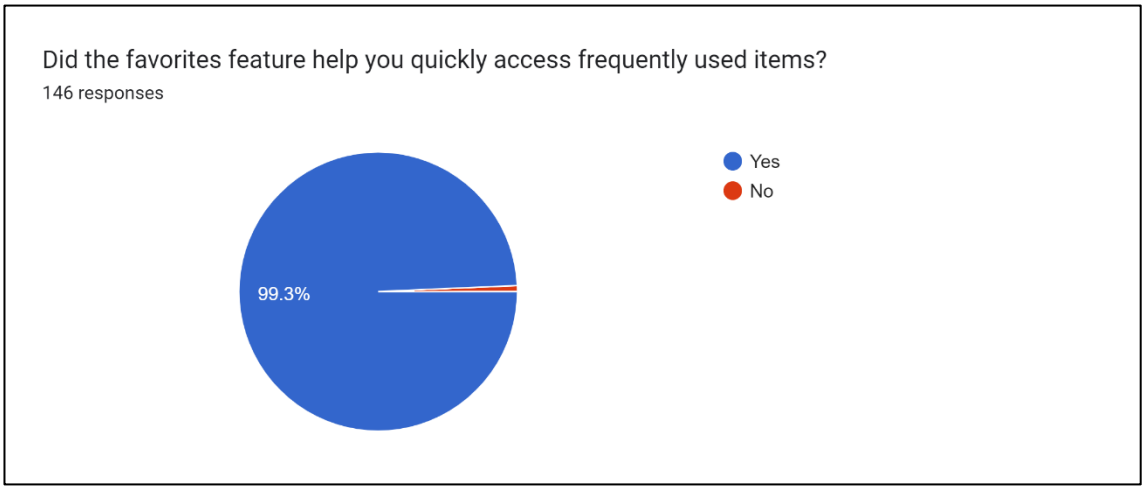
- Next question, which was put forward in the questionnaire, why regarding the favorite feature. In this the HCPs can easy favorite their diagnosis which they find is the most prevalent among his or her patients, or they can mark as favorite the medicine which they mostly prescribe to their patients, or even they can mark surgery as favorite, if there is some surgery which is performed often.



(Fig 2.4)



(Fig 2.5)

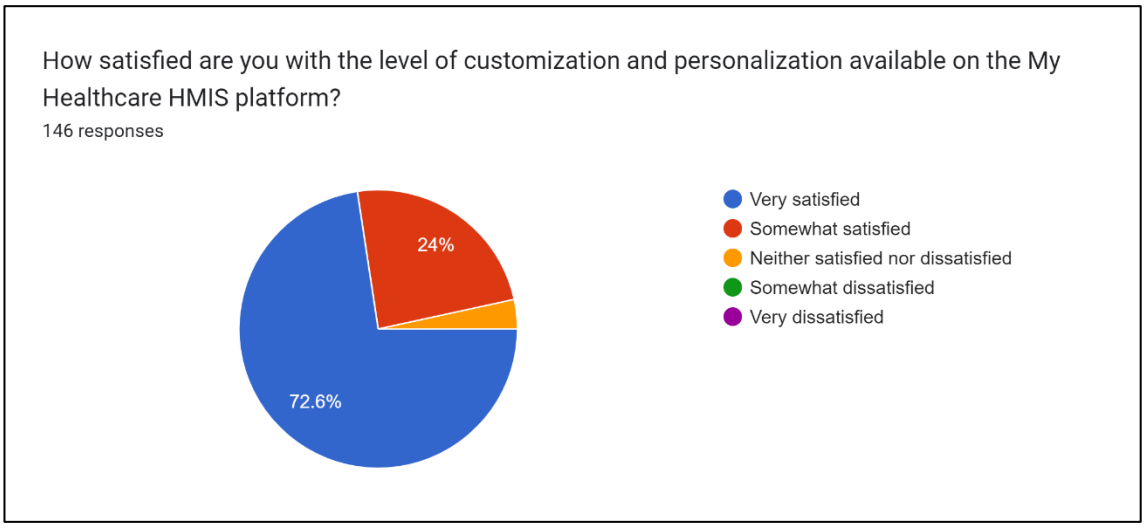


(Fig 2.6)

We can see in Figures 2.4, 2.5, 2.6; an overwhelming support and liking towards the favorite feature.

The reason behind it is simple, it reduces the number of clicks. When you reduce the number of clicks from a process, then the process becomes much swifter, and the user becomes much more efficient. This is the reason why the nursing staff has shown such a keen interest in this feature and an overwhelming support to this feature.

- Last but not the least was the main question, the questionnaire enquires whether the user, specifically the nursing staff is satisfied by the new MHEA system or not.



(Fig 2.7)

In Figure 2.7, is verdict is out the nursing officer find that the nursing staff is quite satisfied with the new MHEA HIS system.

Here as we can see More than 70% of the nursing staff say that they are very Satisfied with the new system.

Furthermore, another 24% say that they are also satisfied with the new system.

This result clearly shows that the nursing staff is happy with the new system and has integrated this very well within their schedule. During the last days at the site, it was very evident that the nursing staff is quite comfortable with the new system, no more calls for bugs or blockers. Even on regular round , it was observed that the nursing staff was doing great work on the system, like vital charting, input-output extra.

DISCUSSIONS

1. The majority of nursing staff in this research paper is of the age group 20-30 years, technically speaking they are just pass out, they ae quite tech savvy, even though during the UG period there was no proper curriculum for it, hence it was comfortable for them to adapt to this new system.

2. The staff was already made aware of the new deployment hence rather than coming as a shocker to the staff, it was an easy transition for them.

3. The team gave a good amount of attention towards the training of the nursing staff, and other HCPs, the front-end support was there for a ample amount of time, even after the implementation, this gave a confidence within the HCPs to check every aspect of the system.
    a. The training itself motivated the HCPs to be more interactive and rectify their queries.
    b. Hands on practical knowledge was imparted to the staff, even late night, sessions were provided to them, so that they all could be prepared for the D-day.

4. While discussing this we must also know that the IT team of the hospital made sure that they also were in constant support with their staff, regarding any query.

5. The HCPs were provided with a dummy system, for them to investigate the various aspects of the system, so that can use it by themselves and assess their needs and requirements. If they find any lack of training, then they could be trained again.

CONCLUSION

- Our study concluded that the overall user acceptance for HIMS is good although there is a lot of scope for improvement.
- The infrastructure did pose a challenge but, it was adequate for the system to function efficiently.
- The factors that affected the acceptability were kept in mind and due attention was given upon them.
- The HIS system is a boon to the working of a hospital, especially considering the clinical work process, the nursing staff which is the primary user of the HIS system from them also it is a boon.
- Feature and reducing the number of clicks is mandatory when it comes to increase the acceptability and adaptability of the HIS system.
- Training should be given due attention because it becomes a backbone to any implementation. The MHEA team gave due attention to the training part,

morning, evening, and even late-night session were organized for the nursing staff.

LIMITATION OF THE STUDY

- This outcome cannot be condensed for the whole HIS system, this study only covered the clinical process and only the nursing staff, there are several other users for the clinical EMR part.
- The study was conducted in very niche area and considering that it cannot be normalized for other study.

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