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INTRODUCTION

Healthcare plays a key role in our community, medical management is imperative for allocated to do their work in a well-organized and competent manner. Every working hour a couple of hundred grand of patients get in medical assistance amenities thought-provoking the administration to manage the performance efficiently. Employees have to supervise and merged medical, economic, and operational information that expands with the training. In the past manually, data was conducted, which was time-consuming and missed to provide the required grade of productivity. Most professionally operate hospitals and clinics now depend on hospital information systems (HIS) that assist and regulate all their clinical and organizational information. (1)

HIS is all inclusive information system dealing with all prospectus of details which is processed in the hospital. Which include individual (and paper-based) report processing as well as data processing apparatus. In the field of health check informatics, the goal of HIS is to accomplish the best attainable encouragement toward the care of patients and administration through electronic information processing. It includes one of few software mechanisms with peculiarity and specific extensions along with a large variety of so-called sub-systems in clinical specialties (e.g., laboratory information integrated, computer-assisted system destined to reserve, in hospital system manipulation and retrieve information concerned with administrative and clinical aspects of providing medical service, and radiology information system). (2)

Information processing cuts over disciplines that comprise but are not limited to medical

management, manufacturing, advertising, finance, authorization, and administration. However, this research resides the challenges employee encountered during HIMS implementation, this paper does not deal with every aspect of the domain of information processing applied to the several domains mentioned above. (3)

The broad field of health information studies the planning, development, approval, and implementation of IT-based improvements in the administration, delivery, and organisation of healthcare institutions. Health systems have been developed and put into practise for patient treatment in a number of locations. The fields of nursing, clinical medicine, dentistry, pharmacy, public health, occupational therapy, physical therapy, biomedical research, and alternative medicine have all benefited greatly from the application of health information, which has raised the reporting of disease outbreaks, disease management, patient care, and cognitive functioning. Ngafeeson distinguished six distinct domains or transitions in the creation of an information system for healthcare administration. (4)

These areas are:

Paper-based System to Computer-based System;

Local health system to Global Health Information System(GHIS)

Healthcare Professional-centred System to Patient-centred System

Numeric data to Complex data forms(4)

Health Management Information System (HMIS)

Regardless of the condition, HMIS is one of the essential components for bolstering any healthcare system, whether it be community-based or individual-focused. Even though a standard HMIS may not be entirely digital, it is frequently made to enable planning, management, and decision-making in the administration and facilities of healthcare through sufficient data collecting and analysis. HMIS offers an automated system for managing patient reports, providing decision assistance, organising healthcare initiatives, and other tasks that would boost the provision of effective and knowledgeable healthcare. Five

The World Health Organisation states that some essential procedures must be followed in the design and development of an HMIS, including

- Analysing the current system;
- Identifying the data requirements of pertinent health system units; and
- Selecting the best and most efficient data flow
- Creating the data gathering plan as well as reporting instruments

Monitoring and assessment of the implemented system; creation of efficient channels for data distribution and feedback; and improvement of the HMIS Even though the processes are straightforward, adopting HMIS in poorer nations has proven challenging due to a variety of issues, including inadequate money, governance, corruption, socioeconomic situations, and legal frameworks. These difficulties are the study's defining feature. (2)

In essence, a hospital information system (HIS) is an electronic system that can manage all the data necessary for healthcare providers to carry out their duties efficiently. Since its first introduction in the 1960s, these organisations have developed along with time and new medical innovations. The electronics systems back then were not as rapid as they are now, and they could not support data as it does now. The hospital inventory and billing management was the staff's main use for them. All of this has changed, and hospital information systems now include all organisational, financial, and medical equipment integrated together. (6)

The primary characteristic of the fourth and current generation of HIS, which debuted in the 1980s, is its ability to integrate departmental and financial services with other third-party systems. (6)

Compared to comparable information systems in other business fields, the introduction and updating of HIS in hospitals is a challenging undertaking, design of the system infrastructure. The primary tasks of the implementation phase include requirement formulation, master data definition and collection, system integration, localization, training, and final system testing. There might be a lot of challenges for the administration throughout the HIS installation stage.

- In accordance with research on the use of HIS (Ash et al., 2004; Ball, 2003; Berg, 2001; Hard, 1992; Little Johns et al., 2003; Memel et al., 2001; Tonnesen et al., 1999; Wetzel, 2001...). Infrastructure, application, and process organisation are identified as the main causes of implementation challenges.
- Controlling the contribution from end users
- Standardisation of data definitions, representation, and vocabulary; • Dispute resolution among multiple departments and end users;
- Integration of multiple data systems, external systems, and independent physician groups;
- Keeping a balance between multiple departments and end users;
    - End user profile and resistance
    - End-user training
    - Software immaturity

- Lack of knowledge on the deployment of HIS;
- Ignorance of the hospital's administrative demands; • Support following implementation (3)

The following suggestions from earlier research (Ash et al., 2004; Hersh, 2002; Memel et al., 2001; Hard, 1992) are meant to avoid implementation challenges using HIS:

- It is important to comprehend the requirements and expectations of all parties involved and to begin preparing appropriately.
- It is recommended to draw upon the experiences of previous HIS implementation projects, taking into account their approaches, areas of difficulty, and reasons for success or failure.
- The goals of organisations and the requirements of local governments should always be balanced. A few of the organization's goals don't align with the demands of the government and the region.
- End users must get information technology training in order for the HIS to be implemented successfully. The continuous education of doctors, nurses, and department secretaries should fall under this category. Information systems should be connected to real-world clinical settings in training.
- To overcome doctors' resistance, a number of strategies should be used, including encouraging doctors to use the system for patient information and result reporting rather than entering orders, giving doctors access to a large number of personal computers, and assigning one person to train doctors one-on-one.
- Benefiting features should be made available to end users, and they should be included in the implementation process.
- When implementing HIS, hardware infrastructure should be carefully prepared (3)

Need of the Study

Find out issues and challenges in HMIS Software at the HAMIDIA Hospital, Bhopal.

Objective/Aim of the Study

- Identify any gaps or areas for improvement in terms of functionality, usability, or efficiency.
- Gather feedback from HMIS users, including doctors, nurses, administrative staff, and other relevant stakeholders. Assess their needs, pain points, and suggestions for improvement.
- Identify areas where additional training or support resources are needed to enhance user proficiency and satisfaction

REVIEW OF LITERATURE

Effective and efficient health management information systems (HMIS) were widely acknowledged at the outset of health system decentralisation as a primary health care strategy, which formed a central feature of health sector reforms across the developing world. HMIS was adopted as a crucial component of district health management strengthening programmes. The primary areas of concern were the effectiveness and sustainability of decentralised district health systems over the long run. The underlying assumption was that district health managers in these decentralised health systems would require data from an efficient and successful HMIS in order to make strategic choices that influence district sustainability and performance.

However, this argument, which is grounded on decision theory and normative management, lacks robust, clear empirical backing. A plethora of empirical data demonstrating managers' decision-making behaviour and the existence of other forms of information outside the HMIS, within the organisational environment, indicate a far more tenuous relationship between the presence of organisational management information systems (like HMIS) and effective strategic decision-making. In order to make strategic choices, this qualitative comparative case study looked at the existence and actions of five officially acknowledged information formats, including HMIS. It was done in two different parts of Zambia.

The objective was to ascertain the viability of the present defences of HMIS and to draw conclusions for the policies in place at the time. There are several types of information in the organisational environment, including the traditional HMIS, as evidenced by the eight strategic decision-making processes that the study tracked down. These data forms are attached to important elements of organisational routine as well as other organisational management procedures. The findings of the study indicate that district health management information solutions need to be drastically rethought in order to take into consideration the availability of alternative information forms inside the district health system that are not part of the official HMIS.

METHODOLOGY

- Study Design – Cross-Sectional Study
- Study Duration– 3 months (09thFeb2023 till 10th May 2023)
- Study Location – Ophthalmology Department and Administrative Hamidia Hospital, Bhopal
- Study Setting – ITSC Technologies Pvt. Ltd., Bhopal
- Type of Data - Quantitative Primary research
- Sampling Technique–Convenience Sampling
- Total population – 39 Employees (3 Consultants, 4 RSO, 8 Junior Intern Dr., 16 Nursing staff. Including all day and night shifts, and 8 Administrative department workers)
- Sample Size– 18 (No. of People who have responded)
- Selection Criteria
- Inclusion
  - Employees of different teams in a single department
  - All permanent employees are included
  - Both male and female employees
  - Employees of all age groups
  - Doctors, Nursing staff, and Administrative departments who are using the Software.
- Exclusion

i. Nursing staff Trainees are excluded from the study and do not have access to the software

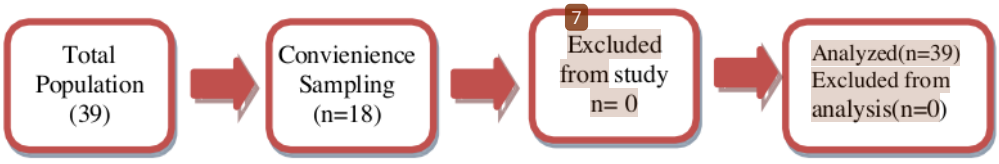
➢ **Data Collection Procedure**

Employees both male and female of all age groups, irrelevant of working experience were recruited for the study. Sampling (Convenience sampling) was done according to the department taken into consideration for the study. Out of the total of 39 employees, 18 employees were recruited for the study. The questionnaire was sent to the employees.

- ❖ Consultants
- ❖ RSO
- ❖ Junior Intern Doctor's
- ❖ Nursing Staff
- ❖ Administrative Department

Teams	Total Number
Consultants	03
RSO	04
Junior Intern Doctor's	08
Nursing Staff	16
Administrative Department	8
Total	39

Figure1: Total number of Team Members



➢ **STUDY PROCEDURE**

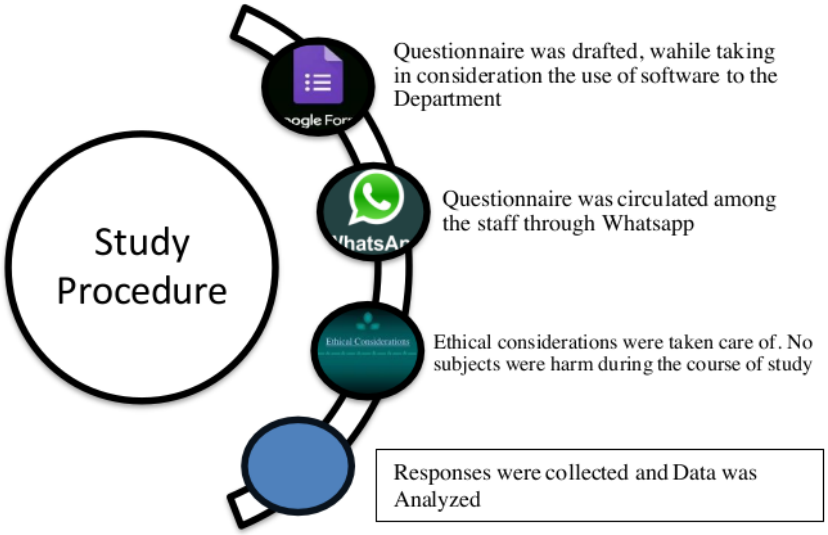


Figure3: Study Procedure

Data analysis – Data analysis will be done using MS Excel to find out the percentage of responses represented in the form of Bar charts, Pie Charts against Yes, No, Not sure

Ethical Considerations:

Since research ethics is a core of any research work, the following aspects have been kept in mind while preparing questionnaires for employees

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- Specific search questions have been designed to gauge the challenges faced by employees in carrying out workflow.
- The identity of all the participants was kept anonymous.
- The participation of the individuals will be purely voluntary and informed consent will be obtained before they participate in the survey.
- The confidentiality aspect of the participants will be strictly adhered to.
- No risk or harm will be caused to any of the participants during the course of the study

DATA ANALYSIS AND RESULTS

1) What Department do you serve in?

18 responses

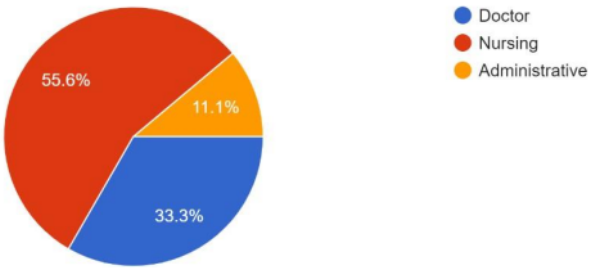

Figure 4:

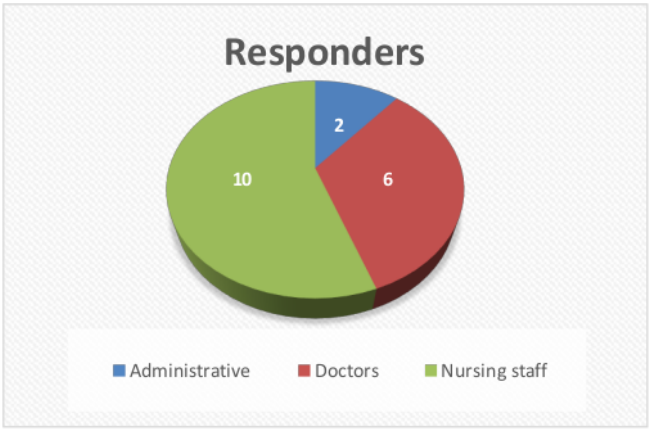

Figure 5:

Breakdown of Participants:

- Nursing Staff: 10 participants
- Doctors: 6 participants
- Administrative Department: 2 participants

The survey data reflects the views of 10 nursing staff members, 6 doctors, and 2 individuals from the administrative department. The diverse representation allows for a comprehensive understanding of HMIS software usage patterns across various roles within the hospital.

2)How frequently the HMIS Software is used?

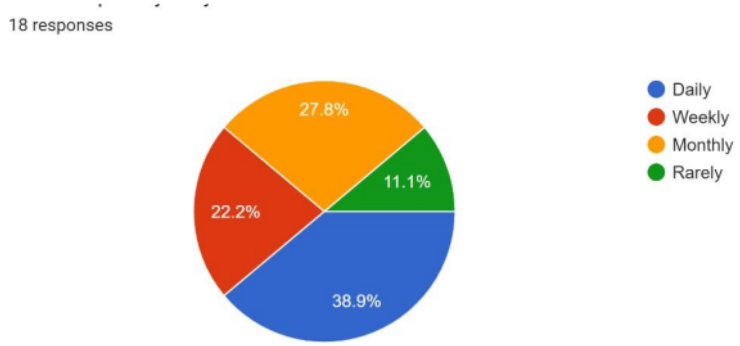

Figure 6:

Daily Users:
- 4 nursing staff members reported using the HMIS software daily.
- 2 doctors stated daily usage.
- 1 staff member from the administrative department confirmed daily usage.

Weekly Users:
- 2 nursing staff members reported using the HMIS software every week.
- 1 doctor mentioned weekly usage.
- 1 staff member from the administrative department asserted weekly usage.

Monthly Users:
- 2 doctors reported using the HMIS software every month.
- 3 nursing staff members also confirmed monthly usage.

Rare Users:
- 1 doctor stated using the HMIS software rarely.
- 1 nurse mentioned rare usage.

The data reveals that the HMIS software is most frequently utilized daily, with nursing staff and doctors being the primary daily users. Weekly usage is also reported by a significant number of respondents, while some doctors and nursing staff members use the software every month. A small portion of the participants stated rare usage.

3) On average, how many hours per day do you spend using the HMIS software?

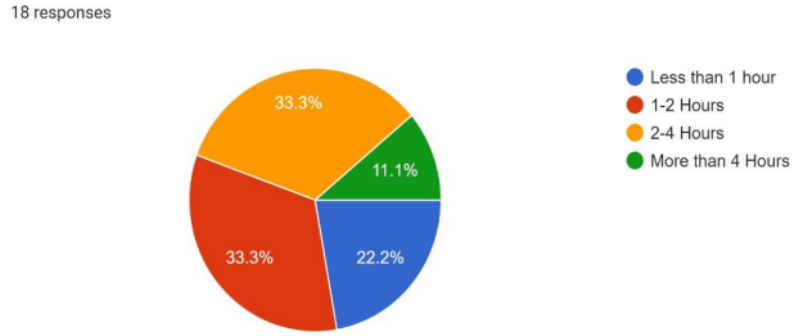

Figure 7:

Doctors:
- 3 doctors reported using the HMIS software for 1-2 hours.
- 2 doctors reported using the HMIS software for 2-4 hours.
- 1 doctor reported using the HMIS software for less than 1 hour.

Administrative Department:
- The administrative department reported that they use the HMIS software for more than 4 hours.

Nursing Department:
- 3 nurses reported using the HMIS software for less than 1 hour.
- 3 nurses reported using the HMIS software for 1-2 hours.
- 4 nurses reported using the HMIS software for 2-4 hours.

The data indicate that doctors mainly use the HMIS software for 1-2 hours, with some spending 2-4 hours. In contrast, the administrative department extensively utilizes the software for more than 4 hours. Among nurses, the usage is distributed across different time ranges, with the majority using it for 2-4 hours.

4) Do you face any difficulties navigating through different sections or modules within the software?

18 responses

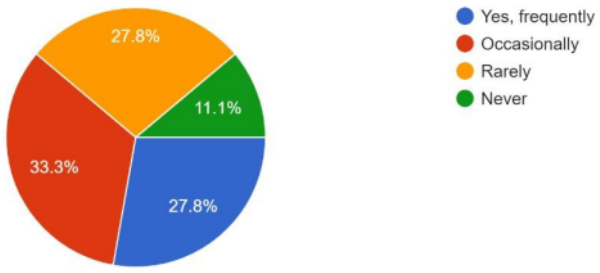

Figure 8:

Doctors:
- 3 doctors responded "Rarely," indicating that they face difficulties navigating through the software.
- 2 doctors responded "Occasionally," reporting occasional challenges in navigation.
- 1 doctor responded "Yes, frequently," expressing frequent difficulties in navigating the software.

Administrative Department:
- 1 respondent from the administrative department reported "Occasionally" facing navigation difficulties.
- 1 respondent from the administrative department reported "Never" experiencing any issues with navigation.

Nursing Department:
- 4 nurses responded "Yes, frequently," indicating frequent difficulties in navigating the HMIS software.
- 3 nurses responded "Occasionally," reporting occasional challenges in navigation.
- 2 nurses responded "Rarely," stating that they rarely face navigation difficulties.
- 1 nurse responded "Never," expressing any difficulties in navigating the software.

The survey highlights that a significant number of doctors and nurses encounter difficulties while navigating through different sections and modules within the HMIS software. The administrative department reported only occasional challenges, and one respondent claimed to have no issues with navigation.

5) Would you prefer any changes to the menu structure or layout to improve ease of use?

18 responses

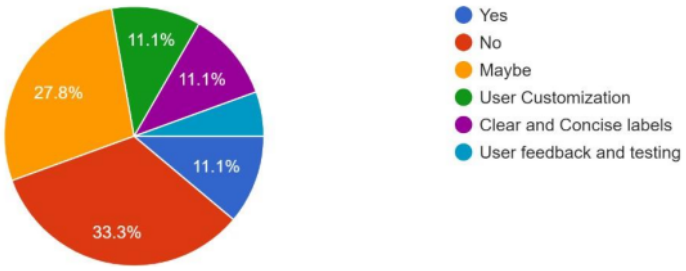

Figure 9:

Nursing Staff:
- 3 participants expressed a neutral response, indicating that they are unsure about any necessary changes.
- 2 participants stated that they do not perceive a need for changes to the menu structure or layout.
- 1 participant suggested incorporating clear and concise labels to improve usability.
- 1 participant emphasized the importance of user feedback and testing for refining the software's interface.

Administrative Department:
- 1 participant recommended user customization options to tailor the software interface to individual preferences.
- 1 participant advocated for incorporating clear and concise labels to facilitate navigation.

Doctors:
- 3 participants stated that they do not perceive a need for changes to the menu structure or layout.
- 1 participant suggested incorporating user customization features to personalize the software experience.
- 1 participant highlighted the importance of clear and concise labels for intuitive navigation.

The diverse feedback received from nursing staff, the administrative department, and doctors provides valuable insights into their preferences and priorities for improving the HMIS software's usability. While some participants are content with the current layout, others suggest incorporating user customization and clear labels as potential enhancements. Additionally, user feedback and testing are considered essential for refining the software's interface to better align with user needs.

6) Are there any specific data fields or sections that you find unnecessary or confusing?

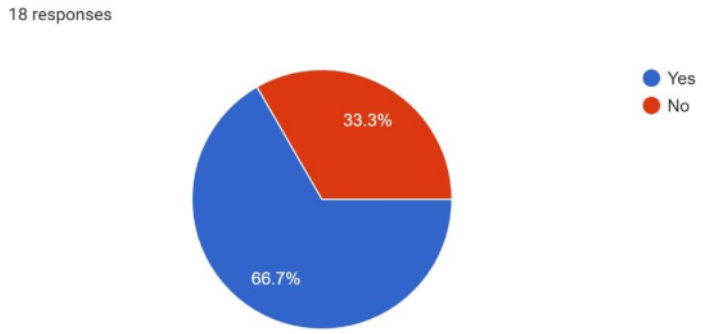

Figure 10:

Nursing Staff:
- 7 nurses responded affirmatively, expressing that they find certain data fields or sections unnecessary or confusing.
- 3 nurses reported that they do not find any specific data fields or sections to be unnecessary or confusing.

Administrative Department:
- 1 participant from the administrative department indicated that they find certain data fields or sections unnecessary or confusing.
- 1 participant from the administrative department stated that they do not find any specific data fields or sections to be unnecessary or confusing.

Doctors:
- 2 doctors reported that they do not find any specific data fields or sections to be unnecessary or confusing.
- 4 doctors responded affirmatively, expressing that they find certain data fields or sections unnecessary or confusing.

The feedback from the nursing staff, administrative department, and doctors provide valuable insights into their perceptions of the HMIS software's usability. A notable number of nurses and doctors find specific data fields or sections unnecessary or confusing, while others do not share this sentiment. The administrative department's responses were more evenly split between those who find it unnecessary or confusing and those who do not.

7) How easy is it to enter patient information and update records in the HMIS software?

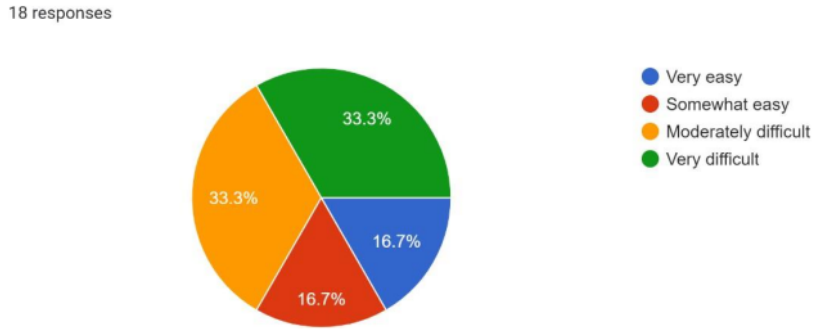

Figure 11:

Administrative Department:
- 1 participant reported that they find it moderately difficult to enter patient information and update records in the HMIS software.
- 1 participant expressed that the process is very easy for them.

Doctors:
- 3 doctors stated that they find it moderately difficult to enter patient information and update records in the HMIS software.
- 1 doctor mentioned that it is somewhat easy for them.
- 1 doctor found it very difficult.
- 1 doctor reported that the process is very easy.

Nurses:
- 5 nurses found it very difficult to enter patient information and update records in the HMIS software.
- 2 nurses stated that they find it moderately difficult.
- 2 nurses mentioned that it is somewhat easy for them.
- 1 nurse reported that the process is very easy.

The feedback reveals a varied range of experiences among the participants. While some users, including a portion of doctors and nurses, perceive the task as very difficult, others find it moderately difficult or somewhat easy. Additionally, some participants, both from the administrative department and healthcare professionals, find the process to be very easy.

8) Would you like to see any additional features or functionalities for documenting patient care or treatment plans?

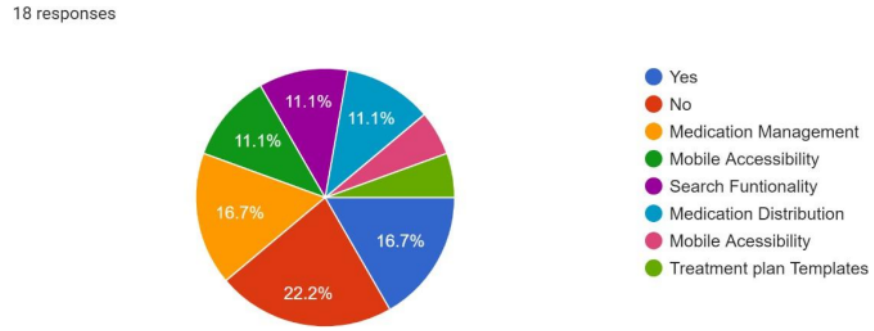

Figure 12:

Administrative Department:
- 1 participant suggested adding search functionality to facilitate easy access to patient records and relevant information.
- 1 participant recommended incorporating a treatment plan template to streamline and standardize the documentation process.

Doctors:
- 3 doctors emphasized the importance of medication accessibility within the HMIS software to efficiently manage patient medications.
- 1 doctor suggested focusing on enhancing medication distribution functionality to ensure accurate and timely medication administration.

Nursing Staff:
- 4 nurses stated that they do not have any specific additional feature requests for documenting patient care and treatment plans.
- 1 nurse suggested enhancing medication distribution functionality for improved medication management.
- 2 nurses expressed their interest in having additional features to enhance medication management and documentation.

The feedback from the administrative department, doctors, and nursing staff provides valuable insights into their preferences for additional features to optimize patient care and treatment plan documentation. Some participants highlighted the significance of incorporating a search function and treatment plan template to improve efficiency and consistency in patient record access and documentation. Doctors emphasized the importance of medication-related features, such as medication accessibility and distribution, to enhance patient medication management.

9) Are there any specific reports or analytics that you feel are missing or would be helpful for your role?

18 responses

Figure 13:

Administrative Department:
- 1 participant indicated that they do not feel any specific reports or analytics are missing.
- 1 participant mentioned that reports related to inventory and supply chain management would be beneficial for their role.

Doctors:
- 4 doctors expressed interest in having reports on clinical outcomes to enhance their decision-making processes.
- 1 doctor requested reports containing patient demographics to gain a better understanding of patient characteristics.
- 1 doctor emphasized the importance of having a decision support system through analytics.
- 1 doctor suggested mobile accessibility to access reports on the go.

Nursing Staff:
- 4 nurses responded positively, expressing their desire for specific reports and analytics.
- 3 nurses reported that they do not have any specific report requests.
- 2 nurses mentioned the importance of reports containing patient demographics.
- 1 nurse expressed interest in reports on clinical outcomes to aid in patient care decisions.

The feedback from the administrative department, doctors, and nursing staff provides valuable insights into their preferences for reports and analytics within the HMIS software. The administrative department showed no specific demand for additional reports, while doctors expressed interest in clinical outcomes, patient demographics, decision support systems, and mobile accessibility. Nursing staff displayed varied preferences, with some seeking specific reports, particularly related to patient demographics and clinical outcomes.

10) Do you find it easy to extract and analyze data from the HMIS software?

18 responses

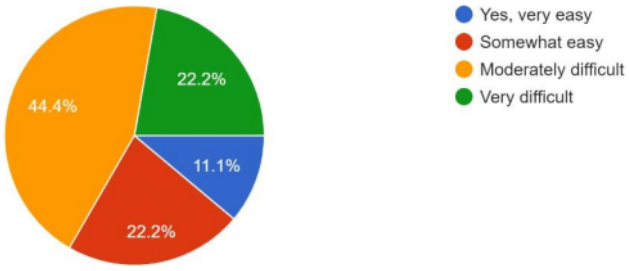

Figure 14:

Administrative Department:
- 1 participant mentioned that they find data extraction and analysis moderately difficult.
- 1 participant expressed that the process is somewhat easy for them.

Doctors:
- 3 doctors reported that they find data extraction and analysis moderately difficult.
- 2 doctors stated that it is somewhat easy for them.
- 1 doctor found it very difficult.

Nursing Staff:
- 2 nurses mentioned that they find data extraction and analysis very easy.
- 3 nurses reported that the process is very difficult for them.
- 1 nurse expressed that it is somewhat easy.
- 4 nurses stated that they find data extraction and analysis moderately difficult.

The feedback indicates varying experiences among the participants in terms of data extraction and analysis from the HMIS software. While some participants, including doctors and nursing staff, find the process somewhat easy, others perceive it as moderately difficult or very difficult. The administrative department's responses were split between finding it moderately difficult and somewhat easy.

11) How Satisfied are you with the current reporting capabilities of the HMIS Software?

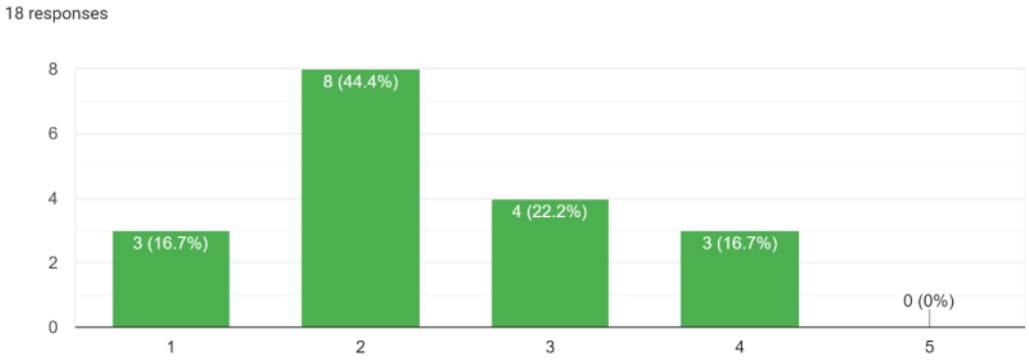

Figure 14:

Administrative Department: -

-A single responder gave the department a 3 out of 5, indicating a fairly high level of satisfaction.
- One person gave a satisfaction score of two, indicating a moderate level of satisfaction.

Personnel in Nursing:

- Two nurses expressed dissatisfaction with their level of satisfaction, scoring a zero.

- The four nurses who rated their level of satisfaction at two indicated a moderate level of satisfaction.

- A bit higher than normal, one nurse provided a satisfaction score of three.

Medical professionals:

- The three doctors who rated their level of satisfaction at three suggested a rather high level of satisfaction.

- Two doctors who gave themselves a satisfaction score of two indicated that they were somewhat satisfied.

- A doctor expressed satisfaction.

The data reveals varying levels of satisfaction with the current reporting capabilities of the HMIS software. While some participants, including doctors and a portion of the administrative department, are relatively satisfied with the reporting features, others, particularly nursing staff, express a more mixed range of satisfaction levels.

12) On a scale of 1-5, how satisfied are you with the HMIS Software overall?

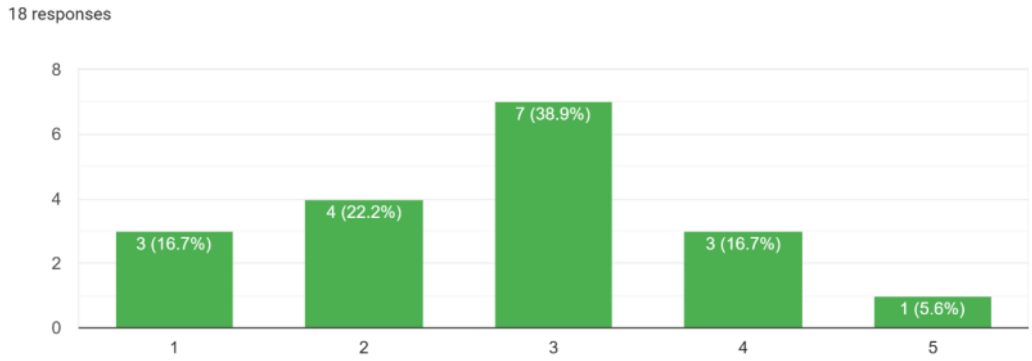

Figure 15:

Administration Department:

- One participant rated the HMIS software with a satisfaction score of 1, indicating a low level of contentment overall.

One individual reported a satisfaction rating of 2, which suggests a slightly moderate level of contentment.

Medical professionals:

- With a satisfaction score of two, three doctors expressed a moderate level of overall satisfaction.

- The two doctors who gave satisfaction ratings of three suggested a somewhat higher level of satisfaction.

-A physician who provided a satisfaction score of four indicated a significantly higher level of happiness overall.

Personnel in Nursing:

- Two nurses provided a satisfaction score of 1, signifying a low level of overall comfort.

There was a moderate level of satisfaction shown by the five nurses who provided.
The data reveals varying levels of satisfaction with the HMIS software overall. While some participants express moderate satisfaction, others indicate lower levels of satisfaction. Notably, a few doctors and nursing staff members are notably satisfied, with one nurse being extremely satisfied.

DISCUSSION

This is the first study conducted on HMIS software at Hamidia Hospital in which issues and challenges have been identified. This study includes people including Doctors-consultants, RSO, Junior intern Doctors, nursing staff, and administrative departments. Some features were not fully detailed, leading to ambiguity and ineffectiveness in daily tasks.

Participants often reported slow progress and system crashes, which affected their functionality and workflow. The software had connectivity problems, especially in areas where network coverage was low or had an unstable Ethernet connection.

The study has resulted and revealed that Hamidia Hospital has some issues and challenges as per HMIS software. These issues and challenges can affect various departments of the hospital, including the Doctors-consultants, RSO, Junior intern doctors, nursing staff, and administrative departments are involved.

Several issues and challenges have emerged at Hamidia Hospital in the use of HMIS software. In this study, we observed that the software is having disturbances and inconveniences in daily tasks due to low features. Users reported that the navigation of the system is difficult to understand and use. This affects their ability and they have trouble accessing and updating patients' records. At the same time, there is also a lack of critical reports in the software and dissatisfaction with reporting capabilities. Doctors and nursing staff are facing limitations in their ability to access and analyze critical patient data. Thus, the challenges and issues faced in this use of HMIS software require that these are taken seriously and addressed.

The organization needs to provide a good understanding and training in navigation and the use of software. There is a need to include better documentation and features in different areas of the software. To ensure that technical problems in the software are minimized, developers should strive for improvements. Also, good Ethernet connectivity and user support in the hospital are important.

Thus, it is important to understand the issues and challenges found in the use of HMIS software at Hamidia Hospital. Incomplete documentation of content, system crashes, connectivity issues, and dissatisfaction with reporting capabilities affect the functionality and professionalism of users. Collaboration between organizations, developers, and users is essential to take the right steps and solve problems to address these issues. Thus, improving and upgrading the HMIS software will help Hamidia Hospital in providing health services and help medical providers to take care of patients using more time and resources

CONCLUSION

This study highlights the Issues and challenges faced by HMIS in Hamidia Hospital. The major challenges faced across the team are:

Some features were not correctly documented as a first challenge, leading to ambiguity and ineffectiveness in daily tasks. Within a time all the workers will become aware of the correct use of this software and they needed to improve the daily operation, but in the absence of this they take more time and the functionality is affected.

As a second challenge, participants have repeatedly reported that software often has slow progress and the system crashes, affecting their functionality and workflow. This not only affects the mental state of the workers but also the difficulty in patient care due to a lack of proper care by their professional staff.

As a third challenge, software faces connectivity problems, especially in areas where network coverage is low or there is an unstable Ethernet connection. This results in the use of the software becoming temporary and the functionality is affected. Employees who are affected by this may temporarily fail to complete their tasks and face a permanent problem.

This study has highlighted that the following challenges are faced in HMIS software: instability reported by witnesses, system crashes, and connectivity problems. These challenges affect various departments of the hospital, which can have an impact on the contents and functionality of the hospital.

Diya Nayak TH ..

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