"Knowledge Assessment of Hospital management System (HMS)

End Users at Eye-Q"

Eye-Q Vision Private Limited, Gurgaon

A dissertation submitted in partial fulfilment of the requirements for the award of

Post - Graduate Diploma in Health and Hospital Management

By

Ms. Jaspreet Kaur

PG/13/029

International Institute of Health Management Research

New Delhi - 110075

May, 2015

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Under the Guidance of

Mr. Niranjan Bulchandani
Assistant Manager-IT
Eye-Q Vision Private Limited

Dr. Anandhi Ramachandran
Associate Professor
IIHMR, New Delhi

International Institute of Health Management Research

New Delhi - 110075

April, 2015

COMPREHENSIVE EYE EXAMINATIONS & LATEST FACILITIES FOR
*PHACO (STITCHLESS CATARACT SURGERY)
*ZYOPTIX LASIK LASER (SPECTACLE REMOVAL)
*PHAKIC IOL
*TRAUMA
*CONTACT LENSES
SUPER SPECIALITY CLINIC FOR
*CORNEA
*RETINA
*GLAUCOMA
*SQUINT & OCULOPLASTY
*PAEDIATRIC & NEURO OPHTHALMOLOGY

EYE Q
EYE-Q
SUPER-SPECIALITY
EYE HOSPITALS

May 14, 2015

TO WHOM IT MAY CONCERN

This is to certify that Ms. Jaspreet Kaur has successfully completed her 3 months internship in our organization from February 16, 2015 to May 14, 2015. During this internship she has worked on "Knowledge Assessment of Hospital Management System (HMS) End Users at Eye-Q" under the guidance of me and my team at Eye-Q Vision Private Limited.

We wish her good luck for her future assignments

Authorized Signatory

Eye Q Vision Pvt. Ltd.

EYE-Q VISION PRIVATE LIMITED GURGAON

Registered Office : First Floor, NS-3, AD Block, Bhagwan Mahavir Road, Shalimar Bagh, New Delhi - 110088
Tel. 011-47292900, Website: www.eyeqindia.com
Corporate Office : 18th Floor, Tower B, Building No. 5, DLF Cyber City Gurgaon - 122 002, Haryana India
Tel. : 0124-4245460, Website: www.eyeqindia.com
CIN NO. - U85121DL2006PTC152665

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. Jaspreet kaur** student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at **Eye-Q Vision Private Limited from 16th February, 2015 to 14th May, 2015.**

The Candidate has successfully carried out the study designated to him during internship training and his 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 future endeavors.

Dr. A.K. Agarwal
Dean, Academics and Student Affairs
IIHMR, New Delhi

Dr. Anandhi Ramachandran
Associate Professor
IIHMR, New Delhi

Certificate of Approval

The following dissertation titled **"Knowledge Assessment of Hospital Management System (HMS) End Users at Eye-Q"** is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post – Graduate Diploma in Health and Hospital 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	Signature
Dr. Oommen John	
Dr. Anandhi Ramachandran	

Certificate from Dissertation Advisory Committee

This is to certify that **Ms. Jaspreet Kaur,** a graduate student of the **Post- Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. He/

She is submitting this dissertation titled **"Knowledge Assessment of Hospital Management System (HMS) End Users" at Eye-Q Vision Private Limited** in partial fulfilment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital 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.

Dr. Anandhi Ramachandran
ASSOCIATE PROFESSOR
~~Assistant Professor~~
IIHMR, New Delhi

EYE VISION PRIVATE LIMITED GURGAON

Mr. Niranjan Burchandani
Assisstant Manager-IT
Eye-Q Vision Private Ltd.

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **"Knowledge Assessment of Hospital Management System (HMS) End Users at Eye-Q** and submitted by **Ms. Jaspreet Kaur, Enrollment No. PG/13/029,** under the supervision of **Dr. Anandhi Ramachandran** for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from **16th February, 2015 to 14th May, 2015** 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.

Jaspreet.

Signature

FEEDBACK FORM

Name of the Student: Jaspreet Kaur

Dissertation Organisation: EYE Q Vision Pvt. Ltd.

Area of Dissertation: Knowledge Assessment of HMS for End Users

Attendance: 100%

Objectives achieved: Yes, With a specific time

Deliverables: Delivered well

Strengths: Intelligent, sincere, follows direction well focused

Suggestions for Improvement: All the best

EYE Q VISION PRIVATE LIMITED GURGAON

Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date: 14/5/15

Place: Gurgaon

ACKNOWLEDGEMENT

A formal statement of acknowledgement is hardly sufficient to express my gratitude towards the personalities who have helped me undertake this dissertation project. I hereby convey my thankfulness and obligation to all those who have rendered their valuable time, help, support and guidance to meet this project completion. A special thanks to the **Almighty** and **My Parents** for the completion of my project.

First of all a special gratitude to **Eye-Q Vision Private Limited, Gurgaon** for giving me the opportunity to work on the project during the three months internship cum dissertation as a part of course curriculum for the partial fulfilment of Post Graduate Diploma in Health and Hospital Management.

No work can be perfect, without the ample guidance. I owe my sincere gratitude to my Organizational Dissertation advisor **Mr.Niranjan Bulchandani, Assistant manager-IT, Eye-Q Vision Private Limited.** Without his ample guidance, regular encouragement, inspiration and intelligent criticism; it would have not been possible to carry out this work. His unfailing constant help and support was a source of motivation & inspiration for me.

I am also highly thankful to **Mr. Subhash Bansiwal, CHRO; Mr. Shishir Paliwal, Human Resource; Mr.Ranjit Tiwari-Training and development** at Eye-Q Vision Private Limited for their constant facilitation in completion of this project.

A sincere token of thanks to **Dr. Anandhi Ramachandran, Assistant Professor IIHMR, New Delhi** for her valuable time as a mentor for completion of this study. Her continuous guidance and support at crucial juncture helped me complete the assigned project on time.

Ms. Jaspreet Kaur

PG/13/029

Abstract

Knowledge Assessment of Hospital management System (HMS) End Users at Eye-Q"

Background behind the study

A well designed Hospital Management System (HMS) could not only save staff time in entering and retrieving data, but also increase accuracy and completeness of such data. The success of such a system not only depends upon its intensive use for maintaining patient's information but also on the End Users who use the system. Therefore, regular knowledge assessment of HMS end users plays vital role. This study majorly focuses on the Knowledge Assessment of Hospital Management System (HMS) End Users.

Objectives of the study

The general objective of this dissertation study is to assess knowledge of HMS End Users in five hospitals/centres at different locations named (A, B, C, D and E) of Eye-Q Vision Pvt.Ltd.

Research Design/Methodology

This dissertation study is a mixture of both Quantitative and Qualitative data. It is a questionnaire based cross sectional study and prospective in nature.

Sample Size: 50 end users from 5 hospitals

Sampling Technique Used: Purposive

Primary Data Sources: Questionnaire (structured) & Observation

Secondary Data Collection: Literature available about HMS, HMS User Manual and Help videos

Results: The major difference in knowledge is found among End Users of Centres/ hospitals A (87%), B(84%), C(89%) and D(85%). End users of Centre E showed average of 91% knowledge of HMS and lead among other four centres. Commercial Executives of all five locations have good knowledge of their HMS module (97%). Based on the level of question, major knowledge gap is noticed in Medium and Difficult level of questions and all these figures focuses on training needs of End Users.

Conclusion: In a growing organization which has presence at number of locations, there is need to keep track of all activities done and knowledge of all End Users at each location. End Users if have sound knowledge of their respective HMS modules, then it will lead to meaningful use of system in an organization with less operational time, reduced wrong entries and optimal usage of resources. Therefore, assessment of HMS knowledge of end users become crucial which exercises to take timely assessment of end users and filling the gaps by properly planned training activities for the end users in their respective module.

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List of Abbreviations

HMS: Hospital Management System

HIS: Hospital Information System

OPD: Outpatient department

EMR: Electronic Medical Record

TCS: Tata Consultancy Services

SLT: Senior Leadership Team

OT: Operation Theatre

OTA: Operation theatre Assistant

CE: Commercial Executive

PRE: Patient Relationship Executive

OM: Operations Manager

IT: Information Technology

IOP: Intra Ocular Pressure

PART 1: INTERNSHIP REPORT

1.1 Organization Profile

Eye-Q is the dynamic new code in Super-Speciality Eye Care. It covers everything, from maintaining optimum vision, preventing deterioration to correcting vision related problems. All this through their exceptional array of preventive and corrective procedures and cutting-edge practices.

The Eye-Q hospital chain is committed to providing best quality eye care at affordable cost across India. It is an ISO 9001-2000 registered organization operating under the leadership of Founder and CMD- Dr. Ajay Sharma who is one of the most renowned eye surgeons in India, aided by a team of specialists with rich experience in their respective specialties from top hospitals across the country.

Presently Eye-Q has presence at Gurgaon (DLF & New Railway Road), Rewari, Rohtak, Yamunanagar, Hissar (Jindal Chowk & Barwala Road), Fatehabad, Bhiwani, Lucknow (Gomti Nagar, Aliganj, Vijaynagar, Rajajipuram), Saharanpur, Muzzafarnagar, Meerut, Kanpur, Sonipat, Delhi (Shalimar Bagh & South Extension), Haldwani, Roorkee, Surat (Rander Road & Udhana Road), Vadodara (BPC Road & Fatehgunj) and Bharuch.

Vision

To be India's foremost chain of eye hospitals in terms of both Quality of eye care and the Number of patients handled

Mission

To make every patient an Ambassador for Eye-Q through a combination of

- Highest level of quality and technology in eye care
- Exceptional personal care
- Complete integrity to the patient and his/her needs

Values

- World class competence and technology
- Charged and motivated team (Maximise your potential)
- Ethical/Transparent
- Exceed customer expectations (great value for the patients' money)
- Pride in association for all stake holders
- Give back to society
- Enjoy the drive

Services provided by Eye-Q

Comprehensive Eye Care	Optical Services
Spectacle Removal Services	Oculoplasty Services
Cataract Services	Refractive Services
Glaucoma Services	Retina Services

Table#1: Services delivered at Eye-Q

Eye-Q Programmes

The Golden Year's Programme

Old age, a time of concern, a time of care and unfortunately for a majority of us, a time of vision-impairing disease. Most people however do not take appropriate corrective measures because often there are no warning symptoms or they assume that poor sight is a natural part of the ageing process. At Eye-Q our team of committed specialists equipped with the latest technologies in eye aim to help you keep that spark alive forever!

Prominent features of the **GOLDEN YEAR'S PROGRAMME**

- Covers the sixty plus age group
- Membership is free of cost & forms available at all our hospitals
- Discount in Consultation fees
- Free review for 45 days months after cataract surgery
- Reminder Call service for medicine & surgical care
- Regular diabetic eye care education programs and age specific vision care programs conducted for the benefit of the members

Executive Eye-Q

Due to Irregular Lifestyle, High Stress level, wrong diet habits and a much greater exposure to interactive visual electronic office aids, today's executive is more susceptible to ophthalmic ailments than ever before. Our special Executive program seeks to pre-empt and correct such problems at the nascent stage and is ideally designed for Corporates and self-aware executives.

Prominent features of the **EXECUTIVE Eye-Q program**

- Free vision screening camp and examinations
- Vision screening camp includes Refraction, Color Vision tests & IOP tests.
- Lifestyle related eye-care tips.
- For empanelled corporates, option for cashless treatment on request will be provided.
- Regular eye care awareness talks.

Eye-Q Juniors (Eye Care for Children)

- About 80% of learning in a child's first 12 years comes from what the child sees through the eyes. Parents need to be extra-vigilant because a child may not realize that his vision is imperfect. Some children are even labelled "learning disabled" or "trouble-makers," when all they need is an eye exam and appropriate vision correction.
- At Eye-Q we understand the value of vision care and early prevention of any eye ailments. Our eye experts arrange vision screening programs for children in association with school authorities.

1.2 Area of Engagement/Departments visited and worked

The internship was divided into two main activities which are as follows:

a. Undergoing training of different HMS modules: As knowledge of the functioning of different departments is necessary to run an organization in smooth flow, deep knowledge of the work of department is must. Hospital Management System is divided into various modules and initial training of all the modules is must which consists of the following:

i. Outpatient Module
ii. In patient Module
iii. Pharmacy Module
iv. Optical Module
v. Commercial Module
vi. Operation Theatre Module

b. Involvement in the project: After undergoing training in different modules, there was involvement in the project for which visits to different five centres was made.

1.3 Key Learnings during the Internship

a. Workflow been followed in six departments which is totally functioning through HMS
b. Ground issues been faced by the end users involved in working on HMS
c. Managing waiting time in Outpatient department (OPD) with help of Patient Flow Tracking System
d. Tracking the reports through Management information system
e. Planning for achievement of targets allocated to each department
f. Benefits of Appointment System with focus on increasing future appointments through HMS
g. Various techniques to handle the end user at the time any issue arises

PART 2: DISSERTATION REPORT

Chapter 1: Dissertation Overview

Overview

This study was conducted in five hospitals/centres of Eye-Q Vision Private Limited situated in locations A, B, C, D and E. Currently they are using TCS Ophthalmic EMR along with the relevant modules of HMS. Different end users have functional roles in different modules which are relevant in their work. The following dissertation report focuses on the knowledge assessment of HMS end users in their respective modules.

1.1 Problem Statement

A well designed Health Information System (HIS) can perform efficiently by reducing operational time in entering and retrieving data and can also provide methods to have accurate and complete data entered into the system. The success of such a system not only depends upon its intensive use for maintaining patient's information but also depends on the End Users who use the system. Therefore, it becomes important to assess knowledge of end users regarding the functions they do in their respective module.

1.2 Objectives of the study

The general objective of this dissertation is to assess the knowledge of End Users regarding the functioning of HMS in five centres/hospitals of Eye-Q Super Speciality Eye Hospitals.

Specific Objectives are as follows:

1. To perform an end user analysis of the various end users based on their HMS knowledge
2. To assess the training needs of HMS end users according to the level of HMS functioning questions (Easy, Medium & Difficult)

1.3 Scope of the Project

This study includes assessing knowledge of HMS End Users in their respective modules for the smooth functioning of hospital with reduced wrong entries and less operational time. It will focus on centre wise knowledge of HMS end users who are in five different roles. Percentage values will be examined to know the knowledge that end user has in respective module.

1.4 Data Sources:

Primary data source: Structured Questionnaire and observation

Secondary Data source: HMS user manual, help training videos

Work Plan: It includes activity table with estimated time taken

Activity	**Estimated Time Taken**	**Expected Outcome**
Overview of HMS	15 days	Knowledge of functioning of all modules of HMS
Defining the problem	15 days	Problem will be defined
Review of literature	10 days	Final draft of proposal
Data collection	15 days	Data of knowledge assessed in values
Compilation and Analysis	10 days	Bar graphs, tables, pie charts
Documentation	10 days	Preparation of final report
Submission of first draft		

Table # 2: Activity table for project plan

Chapter 2: Project Overview

Project Overview

Hospital information systems (HIS) are increasingly becoming an emerging tool in health care arena to efficient delivery of high quality health services. Hospital Information system is one of the most common computer systems have been designed to support health care services. A well designed Health Information System (HIS) could not only save staff time in entering and retrieving client data, but also increase accuracy and completeness of such data. One of the major success factor of HIS is that the users of a HIS should have basic computer skills and familiarity with HIS. As failure to do so, staff will feel frustrated and threatened by the new system. The worst case is that they would even reject the new system or quit the job. This will lead to loss of organizational resources like skilled healthcare workers [1].

Knowledge of the staff to follow correct process leads to reduced wrong entries and optimal usage of resources. For any hospital, the main focus point is to provide the best patient care which would lead to patient satisfaction and delight. To achieve this, Users especially end users should have proper knowledge in use of HMS as it will save time by speeding up the process and by giving quick response to patient. In a hospital which is in developing stage, many changes are done into system (HMS) as per requirement of the process. Therefore, regular assessment of end users becomes important to know their knowledge in their respective modules. The present study deals with the assessment of HMS end users knowledge of their respective modules and the recommendations based on the results of assessment.

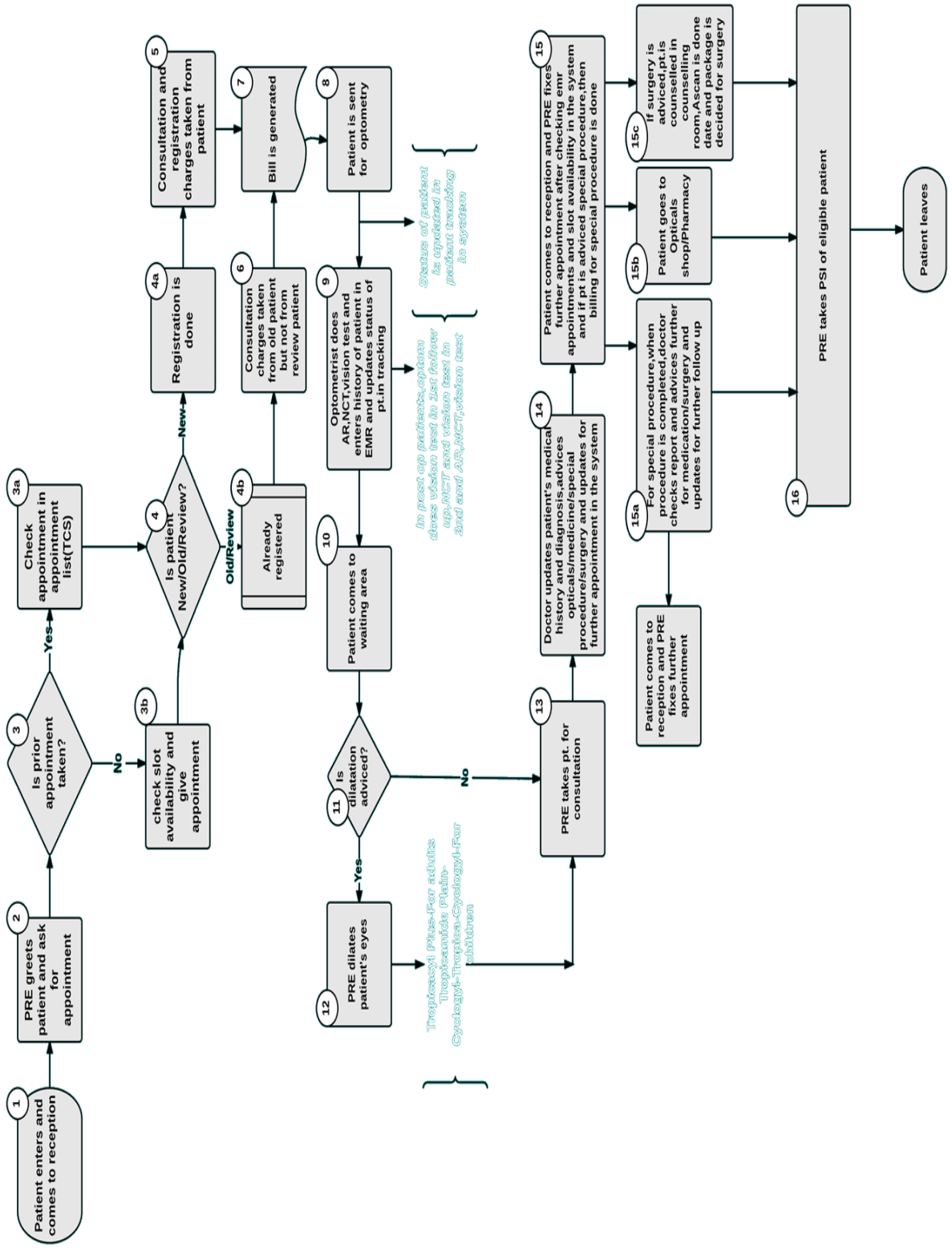


Fig # 1: Workflow of OPD

2.1 Introduction- An Overview to HMS

HMS is a vital tool to manage the information that health professionals need to perform their jobs effectively and efficiently. Eye-Q Super Specialty Eye Hospitals work on TCS Ophthalmic EMR along with the relevant modules of HMS.

HMS Functional Modules consist of:

1. OPD (Appointment, Registration and billing)
2. Patient Flow Tracking
3. Pharmacy Module
4. Optical Module
5. Commercial Module
6. OT Module

Other links available in HMS:

1. Help Videos
2. Upload Files

OPD (Appointment and Registration)

This module assists in fixing appointments for patient and then registering the patient details to generate Unique ID of the patient. OPD in Eye-Q fully works on appointment system, without giving appointment registration of patient is not possible. Every module gives assess to three main features: Functions, Query and Reports. For instance, to give appointment functions feature will come in use, to fetch any previous data Query and to see reports, reports feature will become guide.

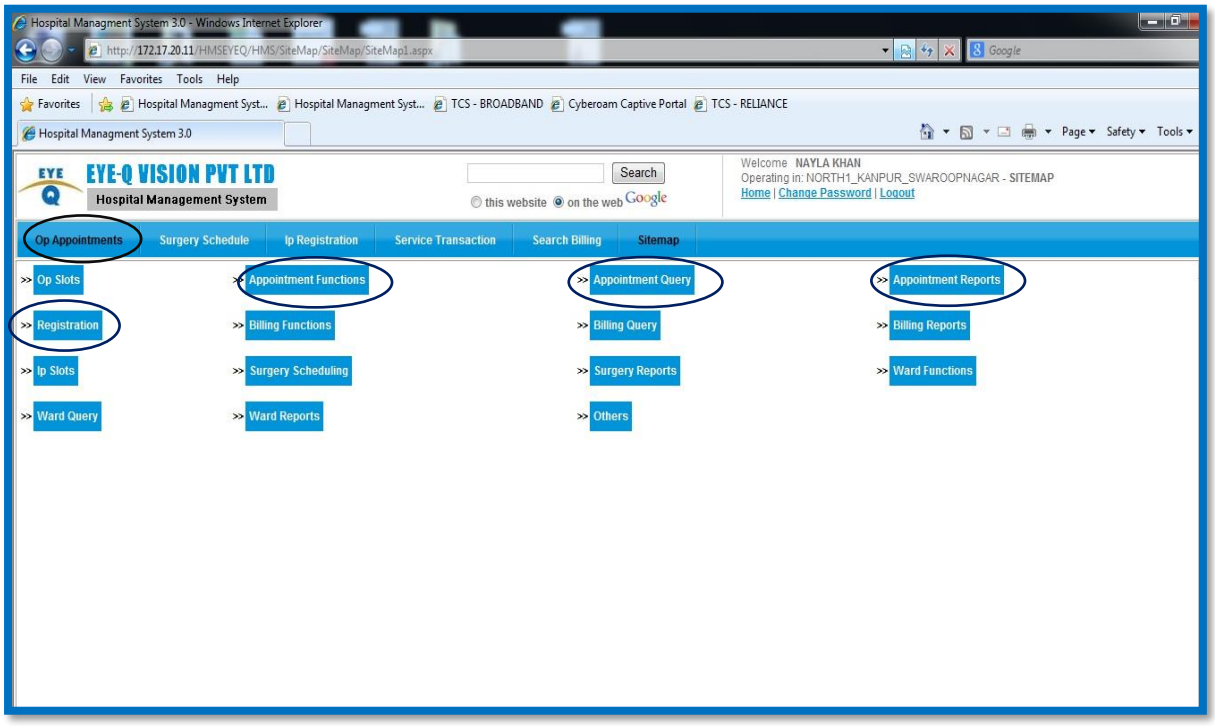


Fig # 2: HMS Dashboard Screen; Appointment and Registration

Below is the appointment screen from where appointment is given to both new patient as well as Old patient and fields written in red are always mandate to fill:

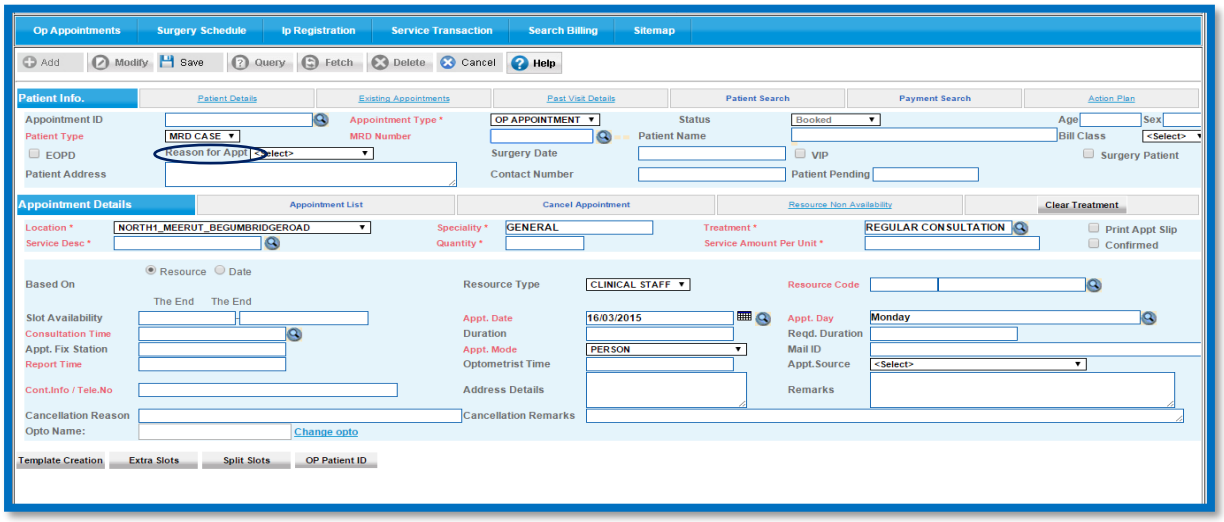


Fig # 3: Appointment Screen; For both New and Old Patient

After the appointment given, registration of patient is done to record patient's demographic details and generate Unique ID of patient.

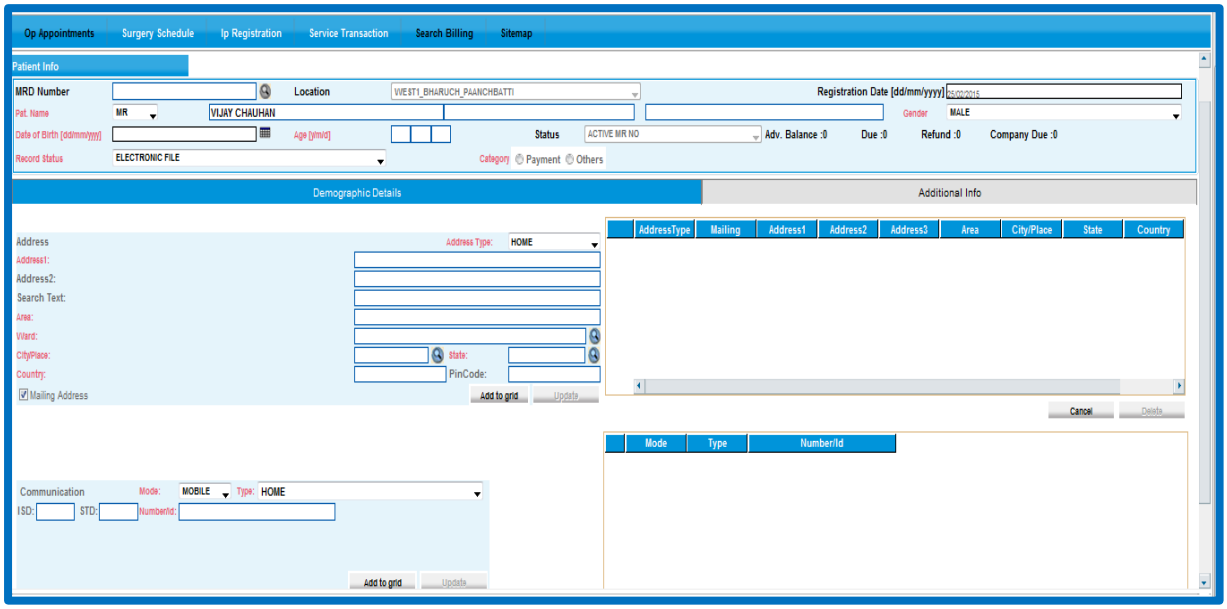


Fig # 4: Registration Screen; Demographic details

After registration, billing for consultation is done through billing screen which is shown below:

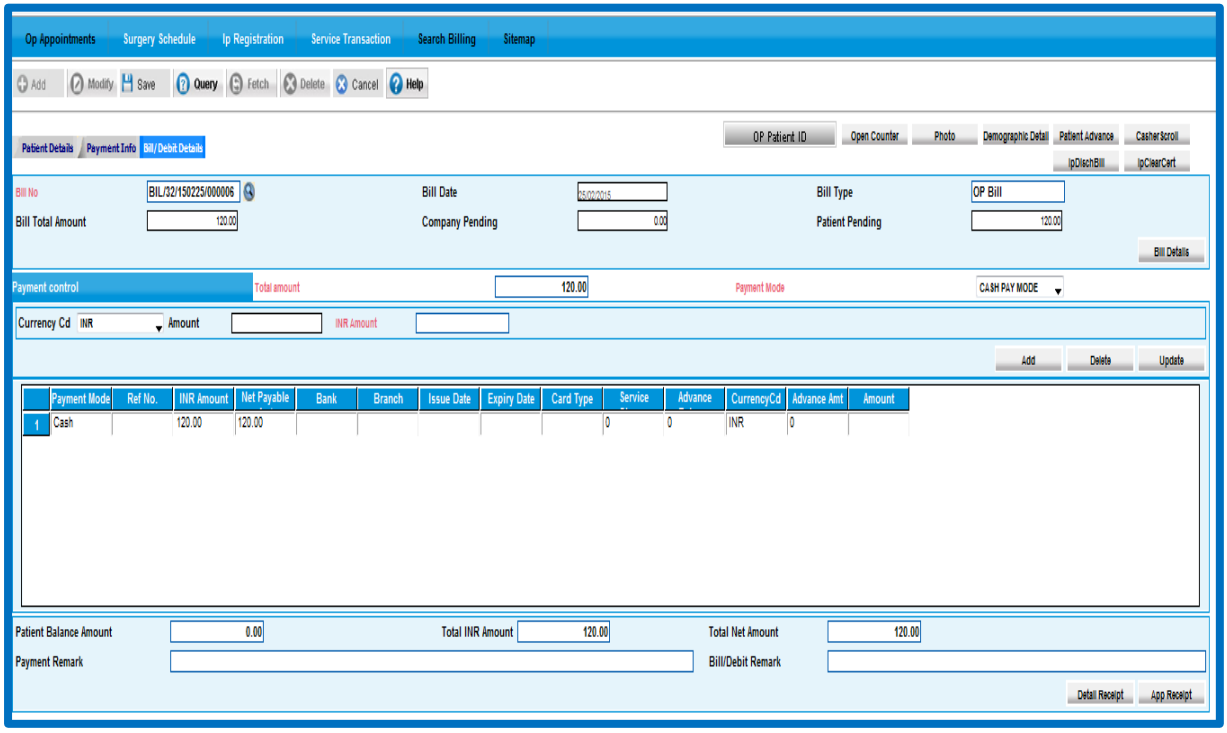


Fig # 5: Billing screen; Cash Payment Mode

Patient Flow Tracking

Patient flow tracking is very important module of HMS as it helps to maintain waiting time by keeping track of patient undergoing activity.

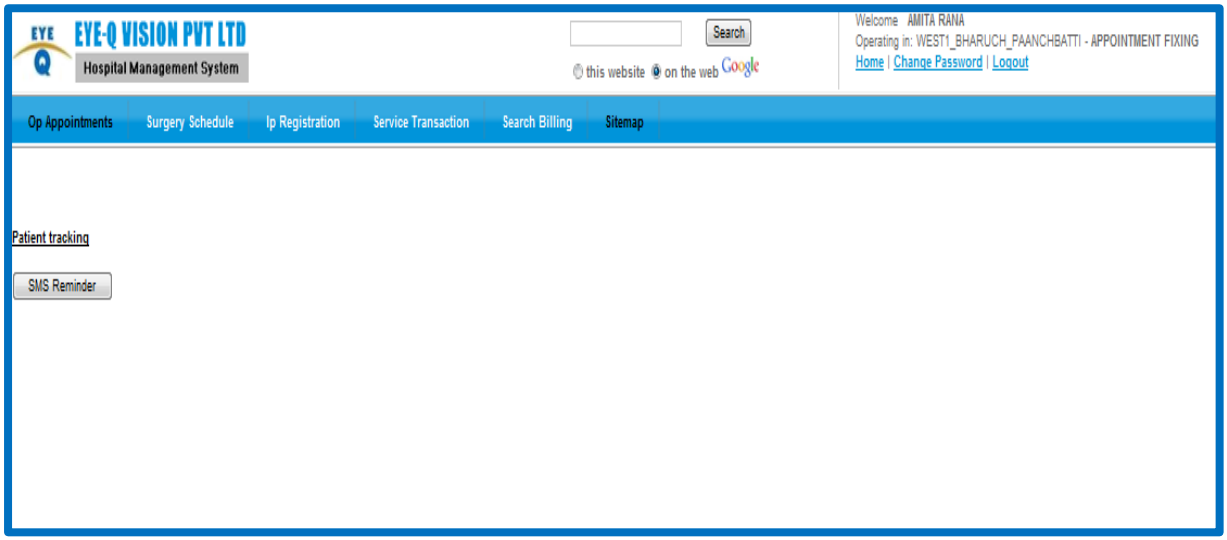


Fig # 6: Homepage of Patient tracking

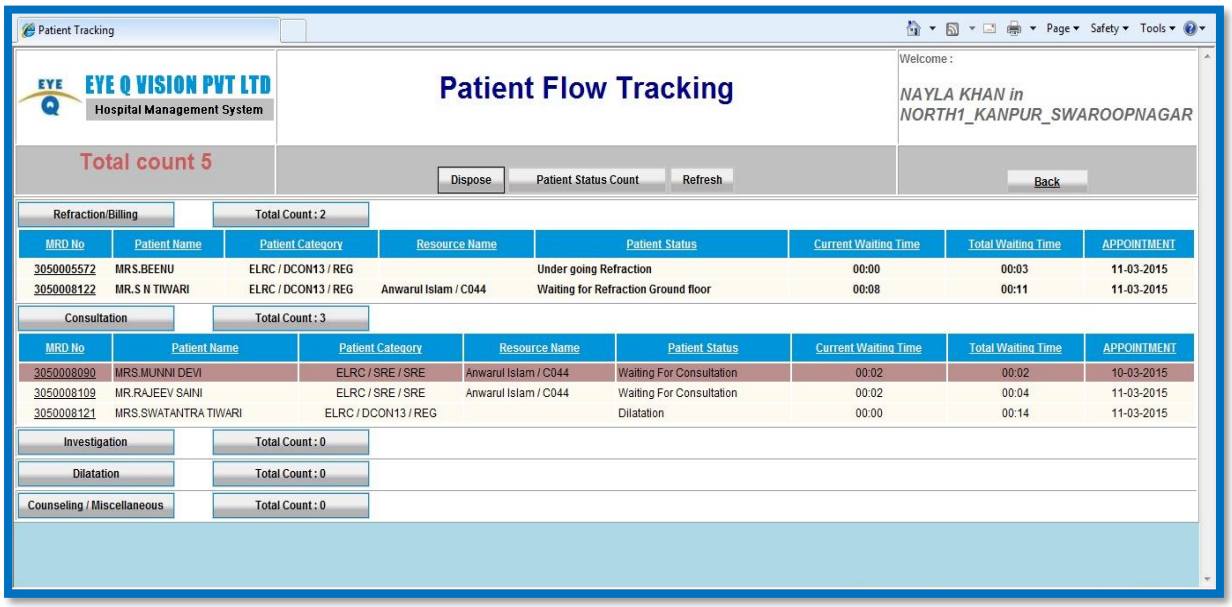


Fig # 7: Patient Flow Tracking Screen; shows disposed and patient status count

Pharmacy Module

Eye-Q has Pharmacy in association with Pinnacle Opticals Pvt Ltd. Below is the main screen of pharmacy module in HMS. Many functions of daily routine are done through this screen. Issue of medicine to outpatient, billing, generating reports, Purchase Order, Goods Receive Note, Stock on hand, Return of medicine etc.

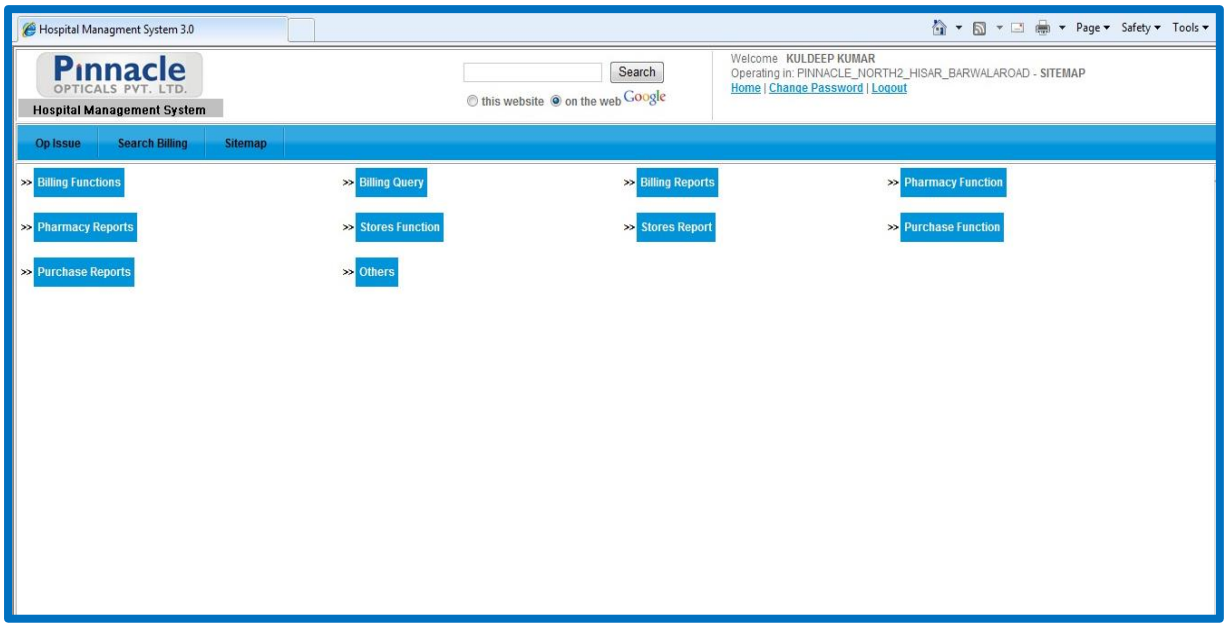


Fig # 8: Pharmacy Dashboard screen

Optical Module

Opticals at Eye-Q is also in association with Pinnacle Opticals Pvt Ltd. Optical module of HMS aids in various functions: Patient order, to raise indent, Advance payment, Billing, Cancellation of order, Refund, Stock on hand, accepting an indent and generating reports.

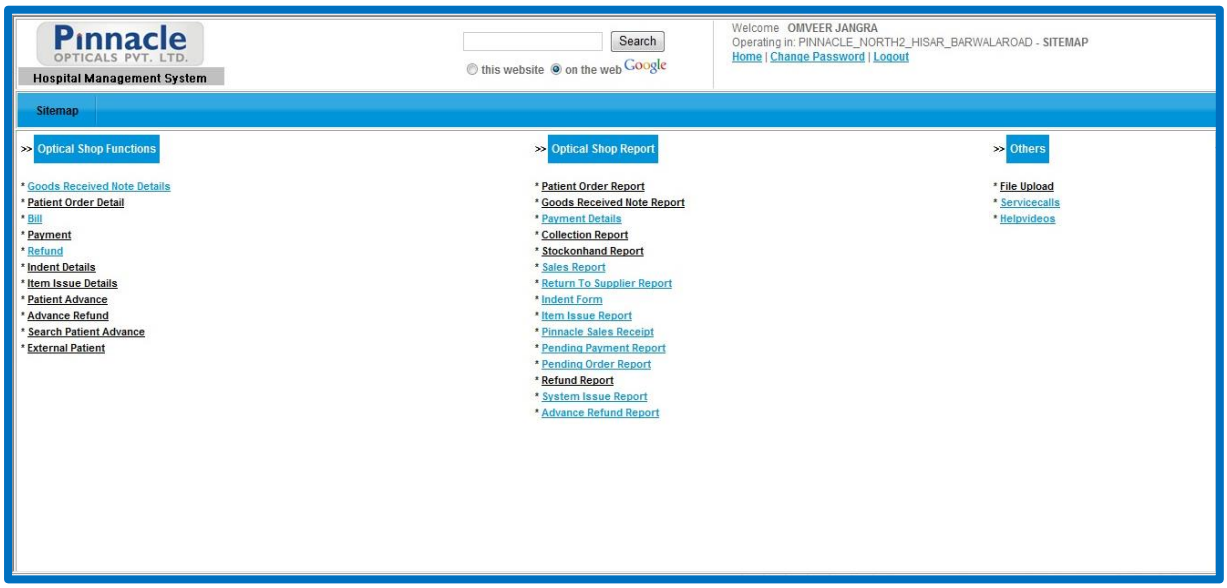


Fig # 9: Optical Main screen

Commercial Module

This module mainly helps in activities of reporting, auditing, raising an indent and reconciliation. Below is the main homepage of this module:

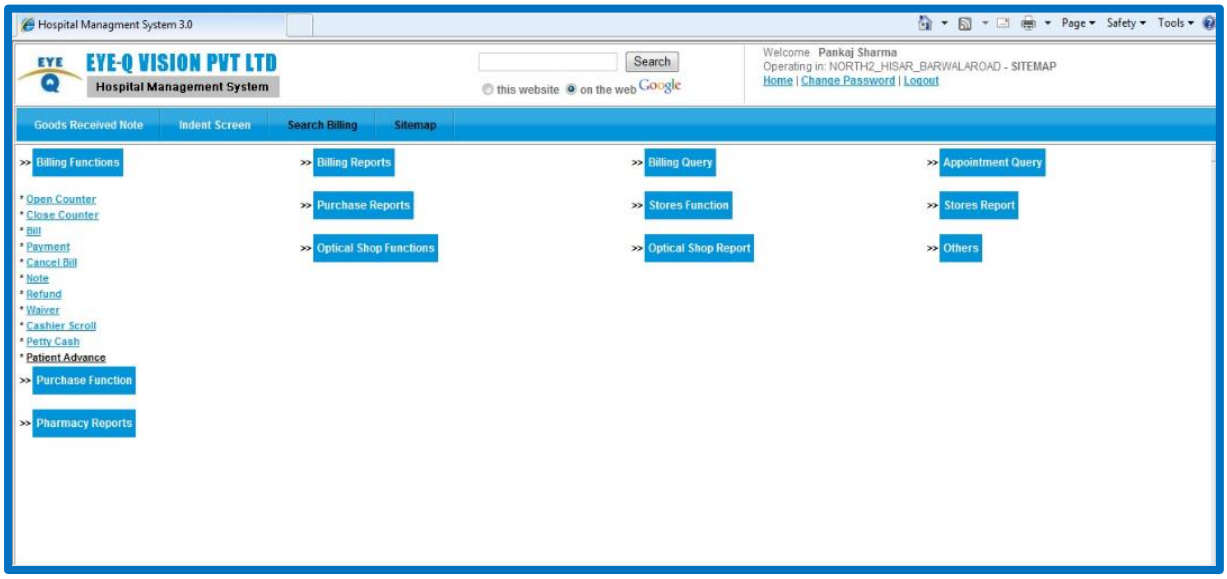


Fig # 10: Home screen of Commercial module

OT Module

This module helps to stock out the items to patient bill used in OT, maintaining the stock in OT, keeping track of OT consumables and instruments.

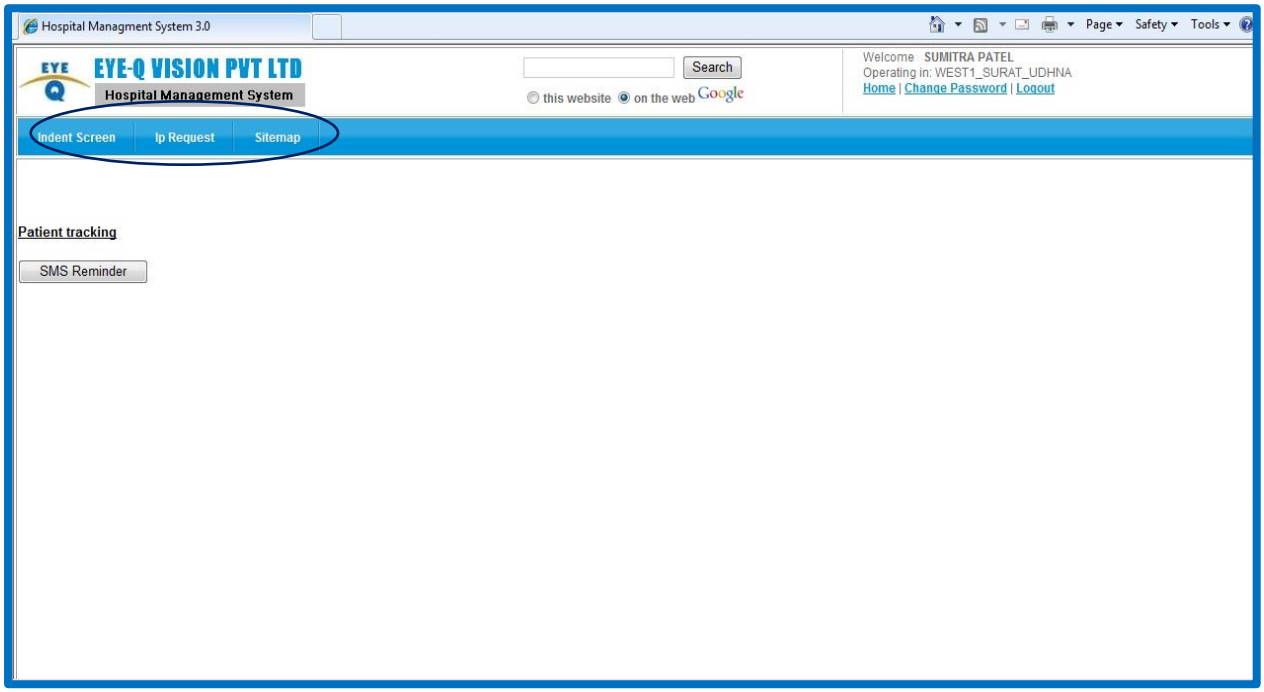


Fig # 11: Main screen of OT module

Other Links

i. Help Videos - These videos help user to learn process of particular function step by step to carry out activity.

ii. Upload Flies – With this link user can upload file to system which are necessary for records. For example: uploading patient's insurance details, medical reports etc.

Various End users involved in use of different modules:

Module	End User
OPD (Appointment, Registration and billing)	PRE(Patient Relationship Executive)/ Front Desk executive
Patient Flow Tracking	PRE
Pharmacy Module	Pharmacist/Medical Sales Executive
Optical Module	Optician/Optical Sales Executive
Commercial Module	Commercial Executive (CE)/Accountant
Operation Theatre(OT) Module	Operation Theatre Assistant(OTA)

Table# 3: Module wise End Users Role in HMS

2.2 Role of Different Stakeholders in HMS according to the access they have

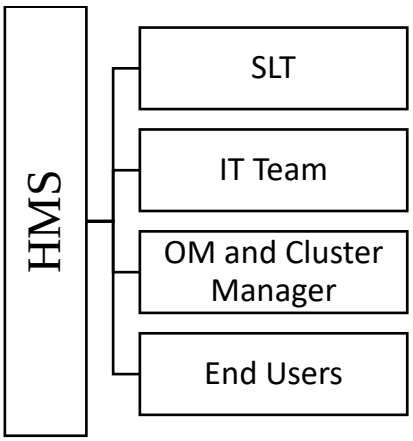


Fig # 12: Different stakeholders

i. End Users- They have access to manage routine process workflow only, without any access to make changes

ii. OM and Cluster Managers- Operations managers have access to make changes into the bills, refunds, authorization for the various purposes. Then, Cluster Managers are on the next level of access as they have access to records of 2-4 hospitals.

iii. IT Team- IT team is accessible to records and almost all functions of HMS as this team has to keep check on the smooth functioning of HMS.

iv. SLT- Senior Leadership team plays vital role as they decide with IT team that which access is given to whom.

2.3 Research Questions

The following are the research questions this dissertation study would be dealing with:

Q1. Which are the centres/hospitals where end users have wide knowledge gap?

Q2. Who are the end users (centre wise) those are in need to gain more knowledge of their Respective HMS module?

Q3. How many questions (level wise) End users are not able to answer?

Q4. How many questions (level wise) are not answered by the End Users (according to the role)?

Q5. Which are the questions that are not answered by End Users?

Q6. What are the results of centre wise knowledge assessment of HMS End users based on level of questions?

Q7. Who are the end users (in all 5 centres) those lack major knowledge of their HMS module?

2.4 Literature Review

1. **Dr. Rajesh Kumar Sinha, Susanna Kurian. Assessment of End User satisfaction of Hospital Information System. Management in health XVIII/3/2014;pp.26-33, also available at:**

   http://journal.managementinhealth.com/index.php/rms/article/viewFile/328/980,

   Assessed on 06.05.2015

Background: Hospital Information System (HIS) assist the hospital staff in carrying out their clinical, nursing, administrative and other daily activities. Assessment of satisfaction of the end users in using the system is important to ensure the proper functioning of the system.

Objective: To assess the satisfaction level of end user towards Hospital Information System. **Method:** A prospective cross sectional study was carried out among 127 end users of HIS, including nursing, front office, administrative, para medical, medical records, maintenance and accounts staff of a women's hospital of Southern India. The data was collected using a structured and validated questionnaire based on 5 point Likert scale from Extremely satisfied to Not satisfied (Score 5-1).

Data Analysis: The collected data was analysed using SPSS 20.0 and presented in terms of frequency, percentage, mean score and standard deviation.

Results: The study result revealed that the respondents were moderately satisfied with the general and module specific features (Mean score < 4). The issues identified were mainly related to Outpatient, Inpatient, Payroll, and Ward Management System to which suggestions

were raised and implemented accordingly. The post implementation satisfaction result indicated that the respondents were satisfied with the implemented changes. Their major concern was to have regular induction and refresher training and to include their requirements in the HIS to assist them in performing their daily routine tasks effectively.

Conclusion: The acceptability and sustainability of HIS largely depends on the inclusion of end users during the design and implementation of the system and their satisfaction with the same. The study result indicated the need to conduct regular and refresher training, and assess the end user need and their interaction with HIS on a regular basis to achieve maximum satisfaction [2].

2. **Sima Ajami and Zohreh Mohammadi-Bertiani, Training and its Impact on Hospital Information System (HIS) Success, Journal of Information technology & Software Engineering 2012,2:5,available at: (http://omicsgroup.org/journals/training-and-its-impact-on-hospital-information-system-his-success-2165-7866.1000112.pdf), accessed on 02.05.2015**

Background: A number of Hospital Information Systems (HISs) fail, because users are inadequately trained. The HIS led to many changes. Training is necessary for providers and staff to adequately learn how to use the new system and adapt them these changes. Unfortunately, often with inadequate training, the system usually does operate, but does not fulfil the original expectations.

Aim of the study: The aim of this study was to express the importance of users training to use successful HIS.

Method: This study was unsystematic-review study. The literature was searched on training and its impact to user satisfaction and HIS success with the help of library, books, conference proceedings, data bank, and also searches engines available at Google, Google scholar.

In this study, more than 75 articles and reports were collected and 41 of them were selected based on their relevancy. A summary of background evidences, which are derived from primary studies that have been selected.

Results: The findings of this study showed there were existed some contributing factors that determine the success or failure of HIS and some factors that influence user satisfaction. The results emphasize that training is one of the key factors to achieve HIS success. Non-trained users fear to lose their job and resist the change [3].

3. **Qiu, Y, Yu, P and Hyland, P, A multi-method approach to assessing Health Information Systems end users' training needs, Med info 2007: Proceedings of the 12th World Congress on Health (Medical) Informatics; Building Sustainable Health Systems, 2007, 1352-1356**

According to this study, To guarantee acceptance and effective usage of health information system (HIS), its end users must be appropriately trained. However many existing training programs did not adequately satisfy its user's needs and the training objectives. This is because they did not envisage the problems that users might encounter when performing specific tasks. Therefore it is essential for developing a good training program to precisely assess end users' training needs. However, applying traditional approaches for Training Needs Assessment (TNA) such as interviews or surveys alone is insufficient. These methods are limited in their

capacity to understand the cognitive processes a learner follows in learning a new computer program. Usability testing, with its ability to gather rich data about human computer interaction, overcomes the deficiencies of traditional approaches. Therefore, Qiu, Y, Yu, P and Hyland, P, proposed a multi-method approach, which combines usability testing method, interviews and questionnaire surveys to assess HIS end users training needs. This innovative method is able to precisely reveal the training needs for different levels of HIS users [1].

4. **Nolwazi Mbananga, Rhulani Madale, Piet Becker, Evaluation of Hospital Information System in the Northern Province In South Africa; The medical Research Council of South Africa, Pretoria, May 2002**

   Background: In 1995 the National Department of Health (NDOH) established a National Committee to develop a National Health Information System Strategy for South Africa (NHIS/SA). The committee was made up of members from each of the nine provinces. The objective of the NHIS/SA was to provide management information for managers and health workers. The committee identified patient care and financial information systems as crucial for health care management in the country.

   As a response to national strategy and in recognition of provincial need, in 1998 the Northern Province started to implement an integrated computerised Hospital Information System (HIS) in its 42 hospitals. The decision to implement HIS in this province coincided with the provincial need to restructure services, which involved shifting resources from tertiary and secondary care levels to the primary care level. Hospital Information System (HIS) was one of the restructuring strategies in the Northern Province.

   The two main objectives of the HIS were as follows:

- Improve patient care by providing patient information within and between hospitals.

- Improve health system management in general, beyond patient care.

Objective of the study

- to assess the efficiency and effectiveness of HIS

Research Methodology: An evaluation framework was designed through a series of multidisciplinary workshops that included all relevant stakeholders. The framework contained qualitative and quantitative components that provided both formative and summative elements of the evaluation. The evaluation was designed as a Randomised Control Trial (RCT). Twenty four hospitals were selected and divided into two groups of twelve hospitals each; an experimental and a control group. The 'control hospitals' were to receive the information system after the 'experimental hospitals', thereby providing a period across which to compare the two. The Investigator, the research assistant and the research co-ordinator were blinded to control bias in data collection. Both quantitative and qualitative methods were used in collecting data. Because of problems beyond the researchers' control the study changed from RCT to a Before and After control group design. Also, the experimental group was reduced to 8 hospitals thereby increasing the control groups' size to 15. The overall aim of the qualitative component of the study was to explain the processes leading to outcome indicators such that it would complement the quantitative component of the study. HIS successes and failures would be assessed by considering the objectives set prior to implementation. The study was conducted over sixth months of HIS implementation. Data were collected before as baseline and for sixth months after implementation.

Data Analysis: Hospitals at which HIS was implemented were compared with those that did not have HIS after the 3rd and 6th month; primarily in terms of a change in their baseline

information. In view of the variability in the data and small group sizes, the use of Wilcoxon rank sum test was decided upon at the 0.05 level of significance. The comparison amounts to testing for interaction between time and hospital group. A graphical inspection of the data rendered analysis of co-variance with baseline values as covariate superfluous. Three types of analysis were conducted for qualitative data: content analysis; inductive analysis and a process/outcomes matrix.

Results and Conclusion: The quantitative findings of the study revealed that there were no changes observed in the median time spent by patients in OPD in both implemented and non-implemented hospitals. In implemented hospitals the median time at baseline was 1.25, 1.52 hours at three months and 1.39 hours at the end of the sixth month. In non-implemented hospitals the median time at baseline was 1.35 hours at three months 1.25 and 1.34 hours at the end of the sixth month.

Although these findings suggest that HIS had not influenced the median time within the time period of the evaluation, the qualitative results indicated that there were positive changes in the work of OPD clerks which might resulted in a reduced median time spent by patients in OPD (qualitative report: appendix) as the HIS became more established. OPD clerks perceived HIS as changing and improving the work of registration and admission of patients. Clerks reported that the system improved their work in the areas of retrieving returning patient's records and in checking the accuracy of the information provided by the

patients in the second visit. It is clear on the basis of both qualitative and quantitative data that there is a need to develop a fertile ground before the implementation of HIS. There is also a need for users to develop a framework of understanding about how the systems function. To implement HIS for users who do not understand it may lead to the failure of

the system. Users are drivers of the system if they do not have reasonable knowledge about it, it is difficult for it to be optimally driven to provide objectives. There is a general ignorance of information systems amongst health workers. This highlights an urgent need to educate health workers about health information systems. The major aspect that creates problems is computer incompetence amongst users. This is a major threat to the success of HIS [4].

Chapter 3: Research Methodology

The study was conducted at five hospitals/centres of Eye-Q Vision Private Limited situated in locations A, B, C, D and E.

3.1 Research Design- The dissertation study involves analysis of both primary and secondary data. It is a mixture of both Quantitative and Qualitative data which is a cross sectional study & prospective in nature.

Pre- Requisite for the study- For this study all the modules of HMS and its integration with each other was studied properly. Study of the workflow and process of OPD module and Optical module is done.

Definition of the End User-The End User for the above study should be a regular staff of the hospital using HMS for various functions with respect to their modules.

PRE/Front Desk Executive using OPD module, Optical Sales Executive/Optician using Optical module, Medical Sales executive/Pharmacist working on Pharmacy module, OTA- OT module and CE/Accountant working on Commercial module.

3.2 Type of data: The data were collected by the following methods:

1. Primary Data Collection: There are times when the information must be collected and this approach is known as primary data collection. The primary data collected were both quantitative and qualitative in nature. Tools which were used for primary data collection were:

a) Questionnaire: Different questionnaire was used for different end users consisting 25 questions (questions are categorised into 3 levels: Easy, Medium and Difficult based on the processes/functions in HMS modules) each respective to their module.

Easy level questions carry 2 marks for correct answer and 0 for incorrect answer, Medium level (4 marks for correct and 0 marks for incorrect), Difficult level (6 marks for correct and 0 for incorrect answer). Five set of questionnaire for five different type of end users (Please see Annexure).

b) Observation

2. Secondary Data Collection: Secondary data is the data that has been already collected by someone else for a different purpose. Here we have to extract the required data from the available resources. The tools used for secondary data were:

a) Literature available about HMS

b) HMS user manual

c) Helping Videos

3.3 Sample Size: 50 end users from 5 hospitals/centres

Hospital/Centre	End users
A	PRE(4), Optical Sales Executive (1), Medical Sales Executive (1), CE (1), OTA (3)

B	PRE(4), Optical Sales Executive (1), Medical Sales Executive (1), CE (1), OTA (3)
C	PRE(4), Optical Sales Executive (1), Medical Sales Executive (1), CE (1), OTA (3)
D	PRE(4), Optical Sales Executive (1), Medical Sales Executive (1), CE (1), OTA (3)
E	PRE(4), Optical Sales Executive (1), Medical Sales Executive (1), CE (1), OTA (3)

Table # 4: Description of sample taken

Sampling Technique Used: Purposive Sampling

Other tools used for the study: Microsoft Office Excel 2013, lucid chart software

Limitations of the study: Sample size is small, not able to cover other centres/hospitals of Eye-Q due to time constraint.

Chapter 4: Results

4.1 Assessment Results and Observation

HMS Knowledge of fifty End users from five centres/hospitals A, B, C, D and E is assessed.

Q1. Which are the centres/hospitals where end users have wide knowledge gap?

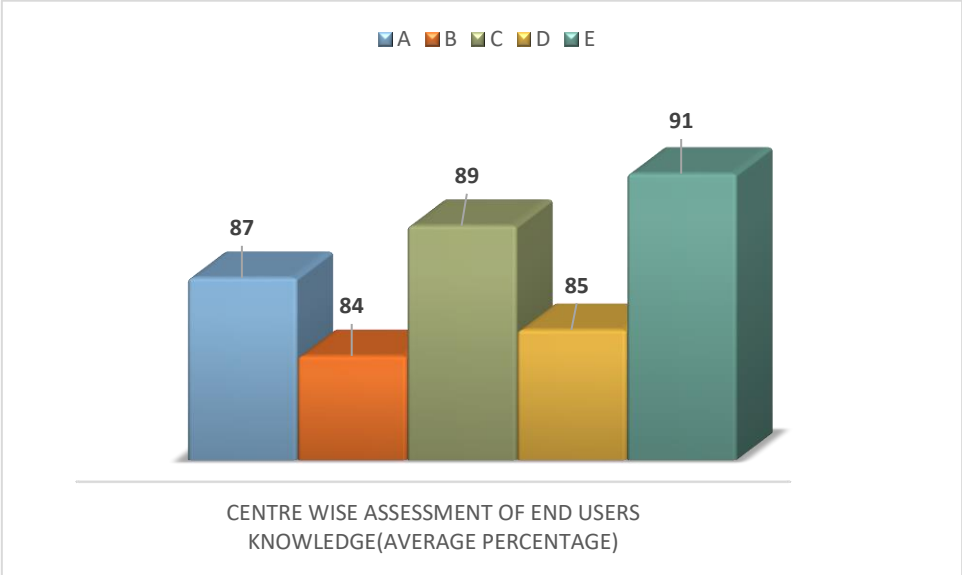


Fig # 13: Graph showing centre wise Knowledge assessment of all HMS end users

The graph depicts some knowledge gap among HMS End users in all the five centres. End users of four Centres B, D, A and C showed around 85% knowledge of HMS with gap of approximately 15%. End Users of Centre E showed least knowledge gap (9%) among other four centres.

Q2. Who are the End Users (centre wise) those are in need to gain more knowledge of their respective HMS module?

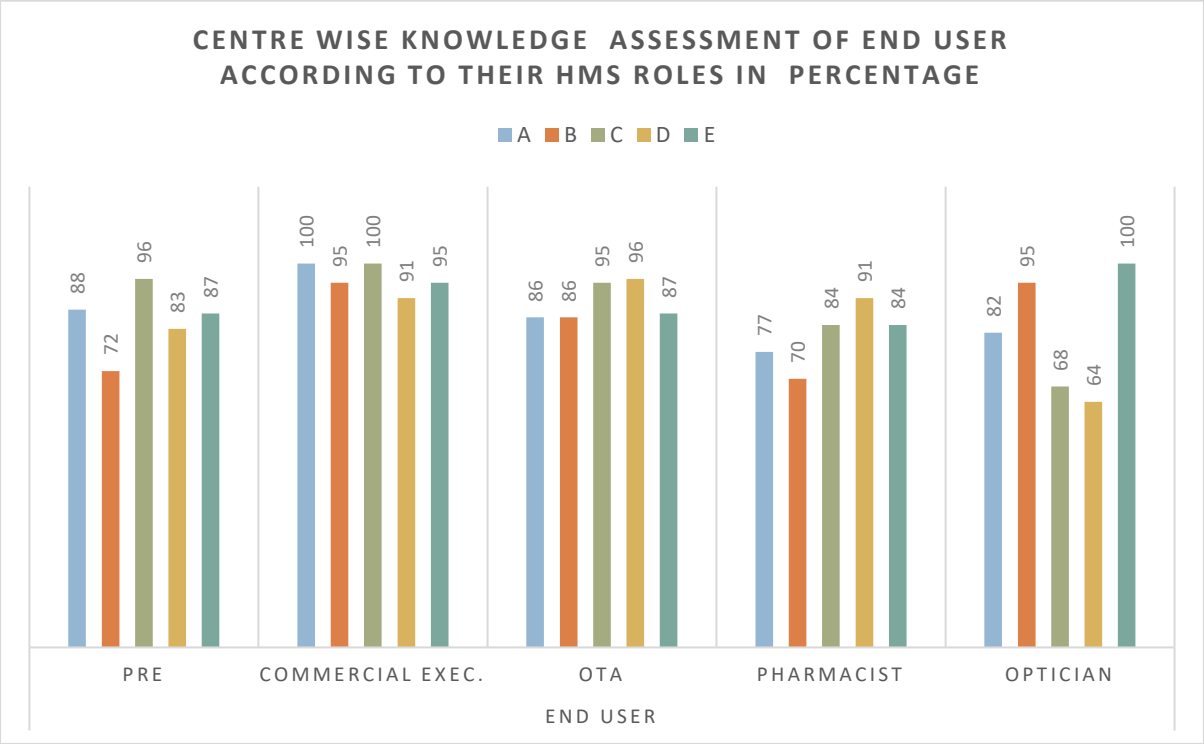


Fig # 14: Graph showing Centre wise Knowledge assessment of End users according to their HMS roles

Centre wise knowledge assessment of end users showed that CE in all five centres have enriched knowledge regarding their module functions with centre A and C achieving 100 percent. In centres A, B, C, D and E, all end users except CE showed utmost need for gain knowledge of those processes in which they lack.

Q3. How many questions (level wise) End users are able to answer?

Questions were divided into three main levels-Easy, Medium and Difficult based on the functions/activities performed by End users in their respective modules.

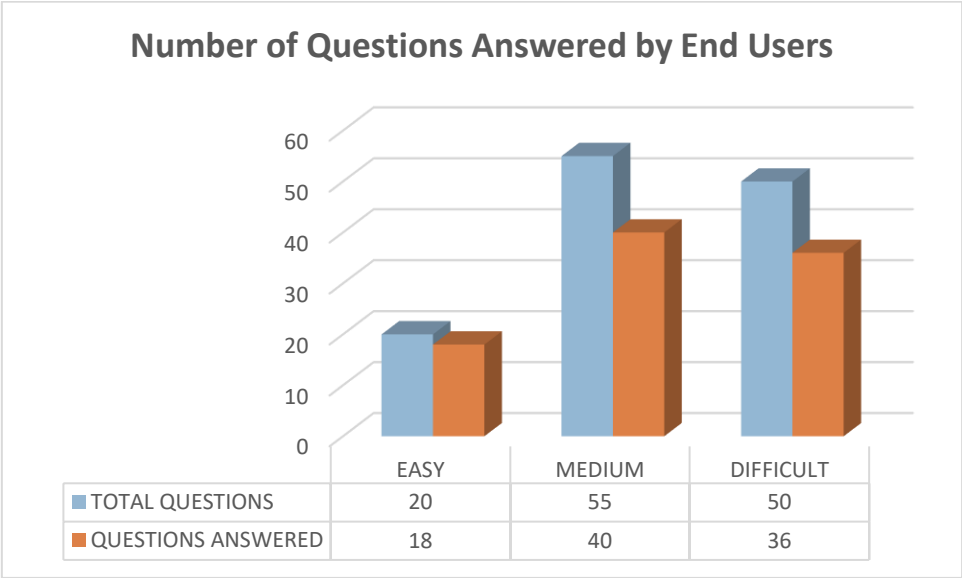


Fig # 15: Graph showing no. of questions (level wise) answered by End Users

Out of 20 Easy questions End users answered 18 correctly, 40 questions (medium level) out of 55 were answered by all the End users and 36 difficult questions were answered correctly.

Q4. How many questions (level wise) are not answered by the End Users (according to the role)?

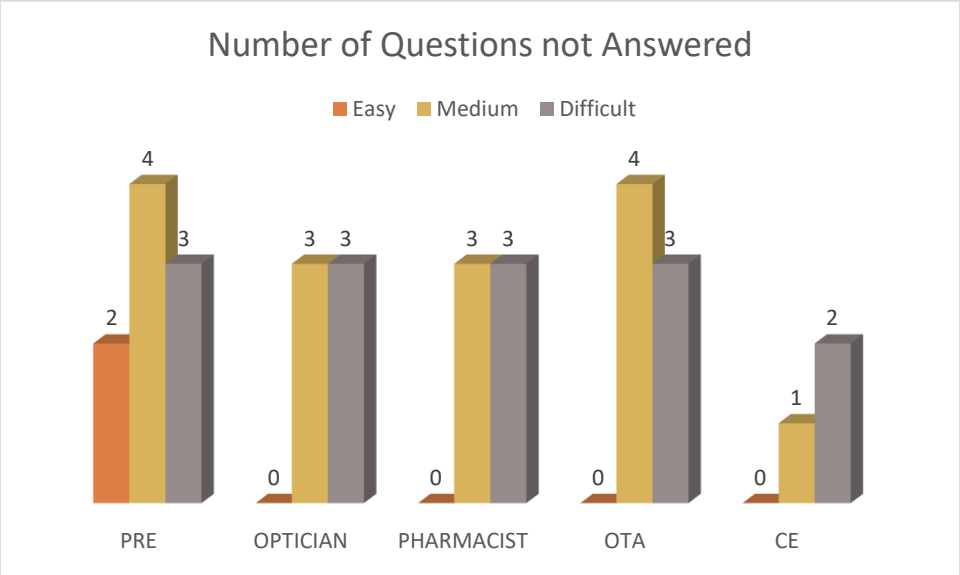


Fig # 16: Graph showing no. of questions not answered by End users

All Easy questions were answered by End users except PRE's (not answered 2 questions); maximum medium level questions were not answered by PRE's(4), OTA's(4) followed by Optician(3), Pharmacist(3) and least questions were not answered by CE(1).Every end user faced problem in difficult questions.

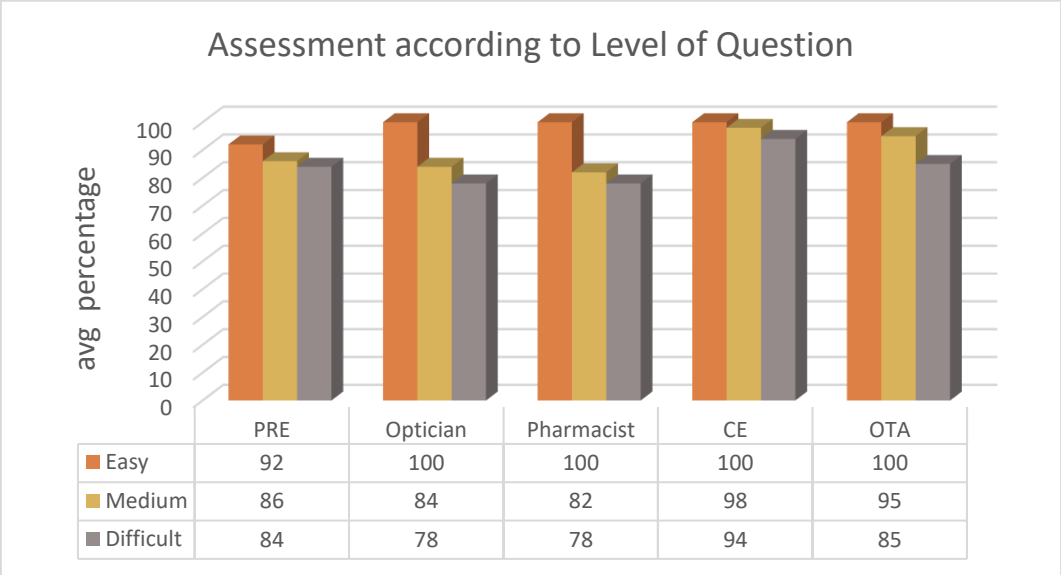
Q5. Which are the questions that are not answered by End Users?

	Easy	Medium	Difficult
PRE	1.Generation of extra slots 2.Fixing appointment for cross consultation	1.Registeration of patient with already booked appointment 2.Making CGHS credit bill 3.Adjustment of advance 4.Viewing case summary of patient	1. Change in age and phone number 2.Changing category of patient from regular to camp patient 3.How to refund advance payment
CE	Answered all questions	1.Raising an indent for OPD stock	1.Updation inflow of petty cash 2.Updation of outflow of petty cash
OPTICIAN	Answered all questions	1.Making patient order entry for sunglasses 2.Making patient order entry for contact lenses 3. Receiving payment by credit/debit card	1.Cancellation of patient order 2.Order entry for external patient 3.How to make GRN

PHARMACIST	Answered all questions	1.Return of medicine to depot 2.Receiving payment by credit/debit card 3.Tracking transactions of external patients	1.Customizing reorder level of medicine 2. Ordering new category of medicine from central store 3. Batch wise entry of medicine into HMS
OTA	Answered all questions	1.Return of IP issue 2.Checking each consumable item 3.all options to find consumable item 4.Checking of IOL library	1.Checking reorder level of consumable item 2.How to set reorder level 3.Marking patient's entry in OT

Table # 5: Questions not answered by End Users

Q6. What are the results of centre wise knowledge assessment of HMS End users based on level of questions?



	PRE	Optician	Pharmacist	CE	OTA
Easy	92	100	100	100	100
Medium	86	84	82	98	95
Difficult	84	78	78	94	85

Fig # 17: Assessment of End users according to level of question

As per the figures, PRE's face problems more in medium and difficult questions regarding HMS functioning. Mostly, all 5 types of end users lack knowledge in medium and difficult level questions. For Medium level questions Pharmacist has least knowledge with 82%, following optician and PRE with 84% and 86% respectively. CE showed good knowledge in all level of questions (Easy 100%, medium 98% and difficult 94%).

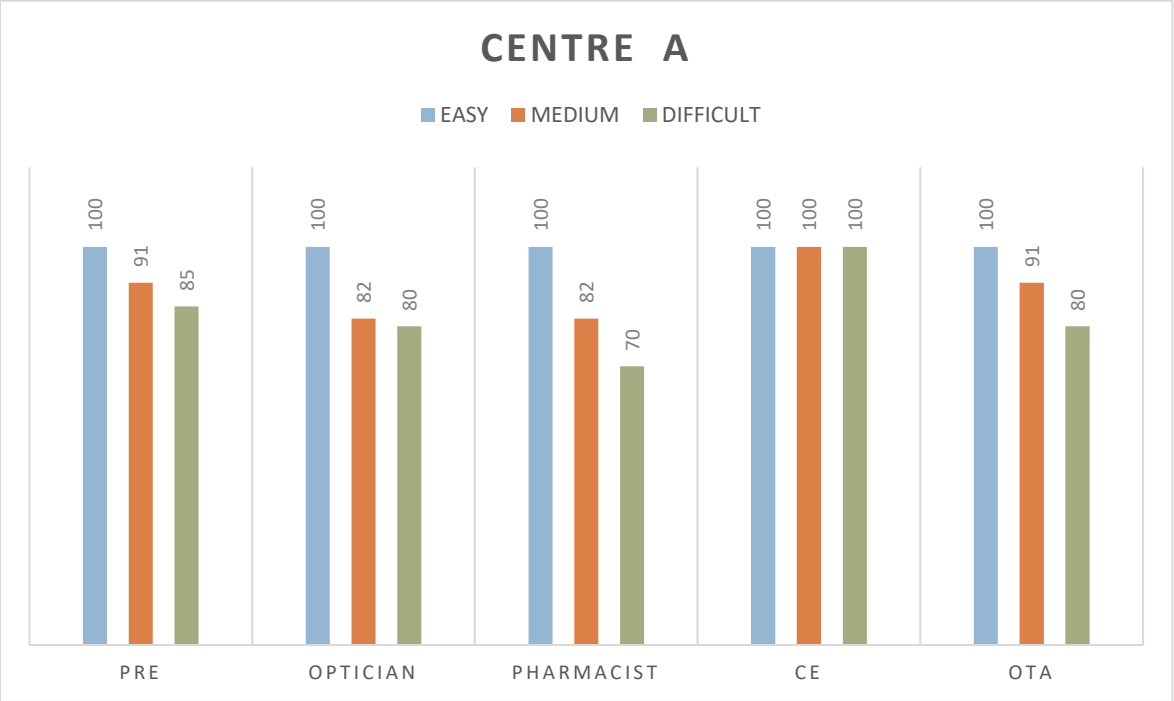
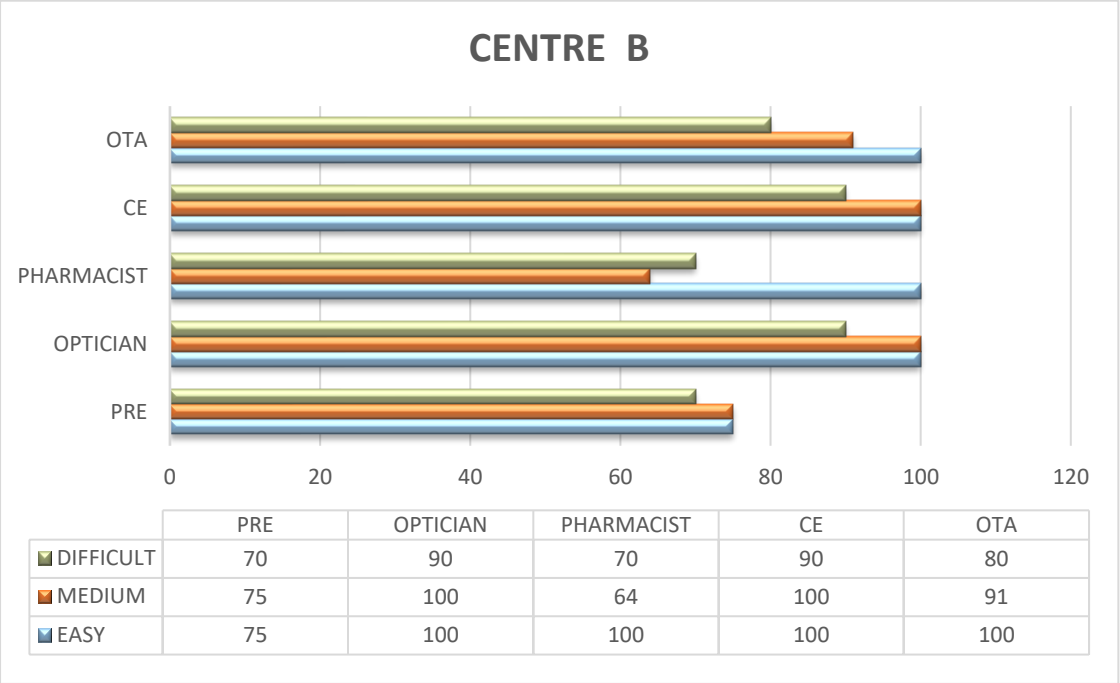


Fig # 18: Graph showing knowledge performance of end users at Centre A

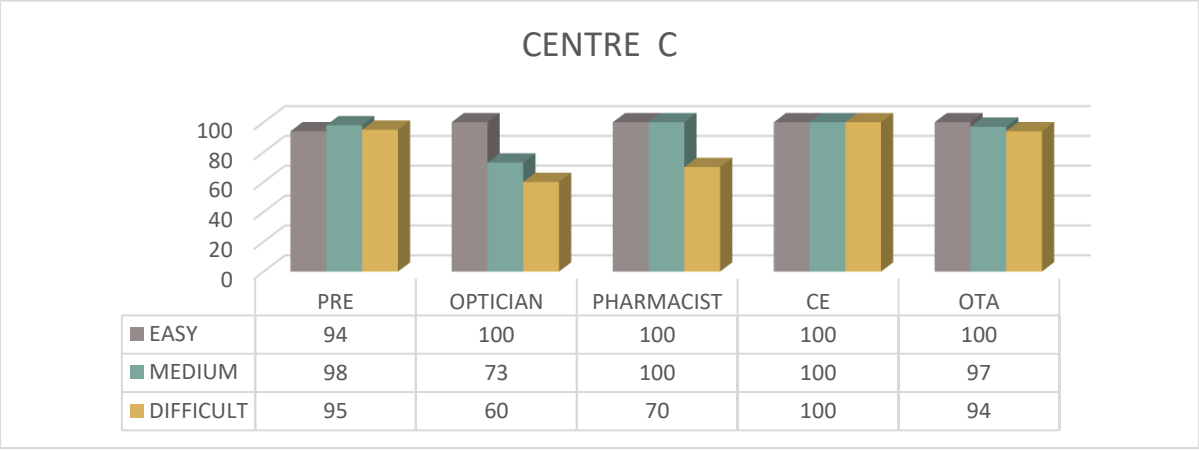
In centre A, all five types of end users have full knowledge regarding easy level HMS functioning questions. CE is enriched with knowledge and leads among all end users. PRE's and OTA's have 91% knowledge for all the processes which are of medium level. Optician and Pharmacist need training as they lack knowledge of their module by 12%.



	PRE	OPTICIAN	PHARMACIST	CE	OTA
DIFFICULT	70	90	70	90	80
MEDIUM	75	100	64	100	91
EASY	75	100	100	100	100

Fig # 19: Graph showing knowledge performance of end users at Centre B

On assessment of centre B it was observed that PRE's lack knowledge of even easy activities of HMS (25%).Optician and CE lead in their module but they both also need training to understand difficult transactions of HMS (optician and CE has 90% knowledge of difficult transactions/activities).



	PRE	OPTICIAN	PHARMACIST	CE	OTA
EASY	94	100	100	100	100
MEDIUM	98	73	100	100	97
DIFFICULT	95	60	70	100	94

Fig # 20: Graph showing knowledge performance of end users at Centre C

Assessment of end users at centre C showed CE leads with 100% knowledge of respective module and, PRE's assessment drew their need of training in all 3: easy, medium and difficult level of processes carried out in HMS. Optician was found to be the least knowledgeable in respective optical module (medium-73% and difficult-60%).

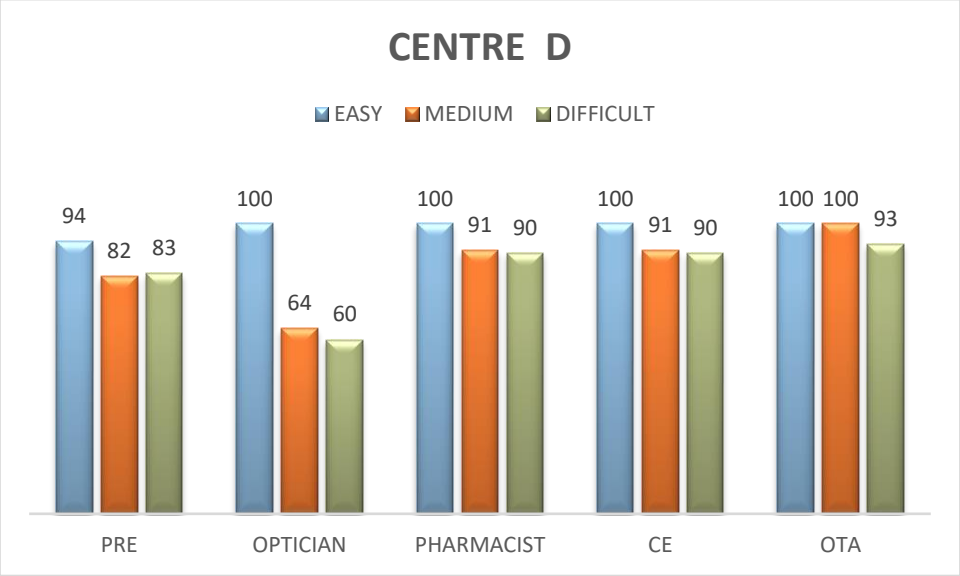
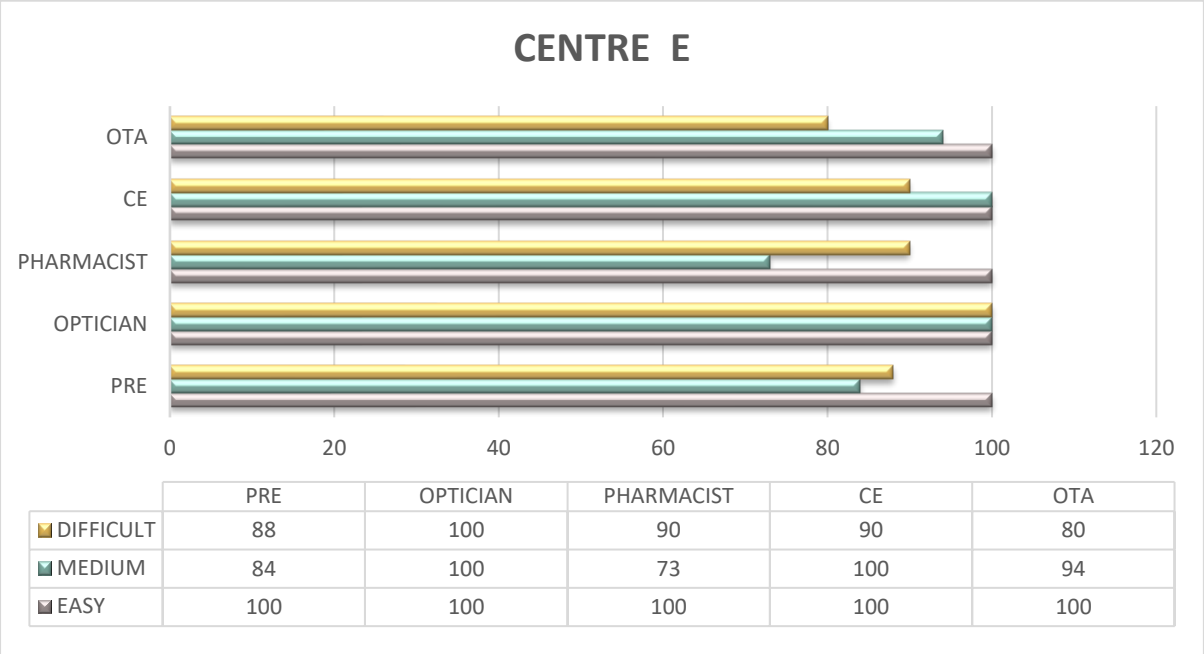


Fig # 21: Graph showing knowledge performance of end users at Centre D

In Centre D, Pharmacist, CE and OTA's depicted full knowledge at easy level questions, and showed around 90% knowledge in medium and difficult level questions. As centre C, optician of Centre D also had less knowledge of respective HMS module.



	PRE	OPTICIAN	PHARMACIST	CE	OTA
DIFFICULT	88	100	90	90	80
MEDIUM	84	100	73	100	94
EASY	100	100	100	100	100

Fig # 22: Graph showing knowledge performance of end users at Centre E

While knowledge assessment of all end users of centre E, it was found that all five types of users were adept at easy questions of their respective HMS modules. Optician was the one who had full knowledge at all levels followed by CE with 90%.

Q7. Who are the end users (in all 5 centres) those lack major knowledge of their HMS module?

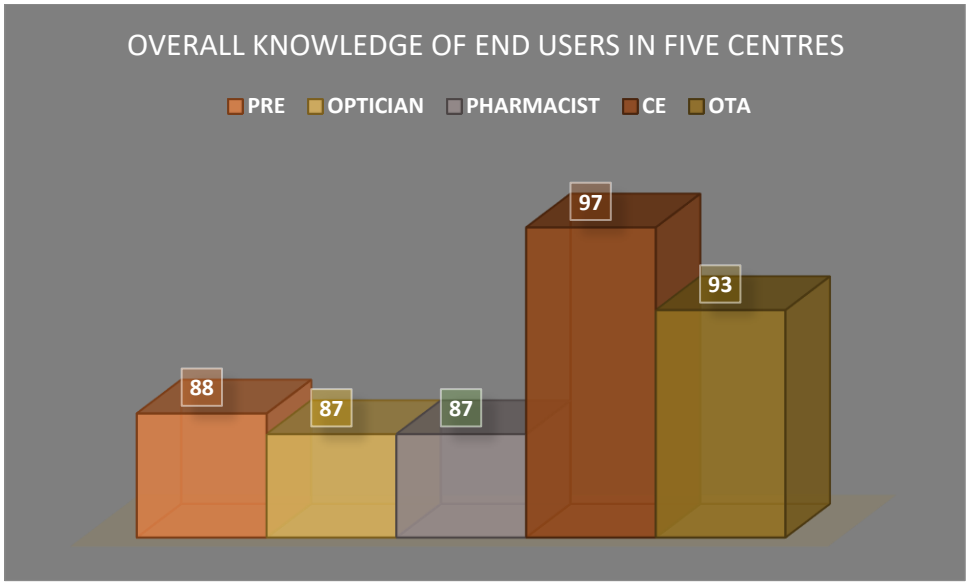


Fig # 23: Graph showing overall knowledge

Opticians and pharmacists from all five centres showed 87% knowledge in their respective HMS module, PRE's showed (88%) knowledge, OTA's(93%) and CE's lead in knowledge for HMS with 97%.

Chapter 5: Discussion

Discussion

Research Q1. Which are the centres/hospitals where end users have wide knowledge gap?

On assessment of knowledge of HMS end users in all 5 centres it was found that centres A, B, C and D have end users with average of 85% knowledge. Therefore, it depicted that these centres have utmost requirement of training to end users so that 100% knowledge of HMS can be achieved. According to Literature, a number of Hospital Information Systems (HISs) fail, because users are inadequately trained. The HIS led to many changes. Training is necessary for providers and staff to adequately learn how to use the new system and adapt them these changes. Unfortunately, often with inadequate training, the system usually does operate, but does not fulfil the original expectations [3]. Centre wise assessment of all users would help further in planning priority list of centres which needs training at high need.

Research Q2. Who are the end users (centre wise) those are in need to gain more knowledge of their respective HMS module?

Identifying End users who are in the need of training is must as it would increase the output of the system as well as will end in higher satisfaction rate among end users. End users training is necessary and critical for the success of the organization or any project. Employees need to learn the skills and knowledge required for the activities done and processes being followed. To provide end users with the right kind of training it requires to study the knowledge and skills of the end users while identifying their training needs. Role based training is the key to a high performance organization as far as end user training is concerned [5]. End users who face major

problem as PRE's, Opticians and Pharmacist should be given training which is relevant to their modules in HMS. CE's and OTA's of all centres should also be given appropriate training. End user wise assessment would help IT training team to club the trainings role wise for all centres.

Research Q3. How many questions (level wise) End users are able to answer?

Assessment of knowledge on 3 levels of question was done for five types of End Users to know the level of processes in which users faced problem while working on HMS.

Research Q4. How many questions (level wise) are not answered by the End Users (according to the role)?

Number of questions not answered according to the level of question by End Users showed level wise number of questions in which end users faced difficulty and thus, gave a way to plan training according to the level which means functional activity done on HMS.

Research Q5. Which are the questions that are not answered by End Users?

There were some questions related to HMS functions (level wise) which are not answered by End users like:

Generation of extra slots for appointments- As per the study, Primary care, Specialty care and Hospital services have certain unique features for managing appointments. In the primary care setting, the vast majority of patients require services that can be performed within a fixed time length. Therefore, primary care clinics tend to divide available provider time into equal length

time slots such that, by and large, patients' needs can be accommodated in a standard appointment slot. For certain types of visits that require more time, clinics may assign multiple appointment slots which manages waiting time very well [6].Therefore, knowledge of generating slots for PRE is important.

Questions were analysed which are not answered by End users so that training team can plan schedule and content for training according to the gaps analysed.

Research Q6. What are the results of centre wise knowledge assessment of HMS End users?

When any organization(hospital) has its presence in many locations, it becomes important to assess the knowledge and performance of employees especially end users who are in direct contact with the services being provide to the patients. Centre wise assessment of end users makes picture clear for the gaps in knowledge. Below table shows the analysis of Centre wise end users who need training in different levels of HMS functions.

Centre	Level	End User
A	1.Easy 2.Medium 3.Difficult	1.No training required 2.Optician, Pharmacist, PRE's, OTA's 3.Pharmacist,Optician,OTA's,PRE's ***No training required for CE***
B	1.Easy 2.Medium 3.Difficult	1.PRE's 2.Pharmacist,PRE's,OTA's 3.PRE's,Pharmacist,OTA's,CE,Optician
C	1.Easy	1.PRE's

	2.Medium 3.Difficult	2.Optician,OTA's,PRE 3.Optician,Pharmacist,OTA's,PRE, ***No training required for CE***
D	1.Easy 2.Medium 3.Difficult	1.PRE 2.Optician,PRE,Pharmacist,CE 3.Optician,PRE,Pharmacist,CE,OTA's
E	1.Easy 2.Medium 3.Difficult	1.No training required 2.Pharmacist,PRE,OTA's 3.PRE's,OTA's,Pharmacist,CE ***No training required for Optician***

Table # 6: Centre wise result of HMS end users for training

Overall reason for the gaps in knowledge of HMS end users was observed and was found that there was no training being given to the end users in last 8 months after some changes done to functions of HMS and there were also some new joiners as end users who were not given training but learnt HMS by observing their seniors.

Chapter 6: Conclusion

Conclusion

Every organization these days is seeking for efficient and effective usage of HMS which saves time and promotes optimal usage of resources. This is possible only when End Users are adequately trained and adept in it, as it further reduces operational time in entering and retrieving data and also minimises wrong entries of data into HMS. In a growing organization which has presence at number of locations, there is need to keep track of all activities done and knowledge of all the End Users at each location, because End Users are the ones who are face of an organization .In an organization there are always some changes which are done in HMS to carry out functions smoothly and there is always new entry of end users, therefore, assessment of HMS knowledge of End users become crucial. Regular HMS Training given to End users is the premium solution to keep them knowledgeable and updated.

An effective end user training program should have the capacity to deliver timely, effective, efficient and enjoyable learning experience to the end users. To keep cycle running smoothly, Knowledge assessment of HMS end users followed by regular trainings given to them to keep them updated with the changes is must for an organization. End Users Knowledge Assessment of HMS helps to plan for training programmes as per user of each location. Therefore, continuous HMS training to End Users is an indispensable solutions for many problems.

Chapter 8: Recommendations

Recommendations:

1. Online assessment program for End Users: There should be a program to assess the knowledge of users online. It can be done fortnightly which can become regular activity for every centre of Eye-Q. This program will also help end user to keep themselves updated regarding knowledge of HMS. On the other hand, IT team would also be helped to know performance of end user and further will help them for retraining.

2. Training to all new joiners: End users who are new joiners should always be given HMS training under Mentor, and after completion of training online test should be conducted on various level of activities in HMS. Test should be conducted on training server.

3. Refresher training workshops for existing end users: If refresher training workshops would be there, it will help in efficient and effective usage of HMS. In this workshop, ideas to make HMS more feasible to use can be discussed with end users. This will lead to 100% compliance of HMS usage and unity of happy and satisfied users.

Chapter 9: References

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Chapter 10: List of Appendices

Questionnaire for PRE

	PRE		SCORE	
		LEVEL	INCORRECT	CORRECT
1	How to make extra Slots?	EASY	0	2
2	How to fix an appointment for a new patient?	EASY	0	2
3	How to fix an appointment for cross consultation?	EASY	0	2
4	How to search patients record from mobile number	EASY	0	2
5	How to register a patient with an already booked appointment	MEDIUM	0	4
6	How to search patients's appt. from contact NO?	MEDIUM	0	4
7	How to make a bill for an Employee's Relative?	MEDIUM	0	4
8	How to make a CGHS credit bill	MEDIUM	0	4
9	How to receive advance payment?	MEDIUM	0	4
10	How to adjust the advance?	MEDIUM	0	4
11	How to receive payment by card/credit card?	MEDIUM	0	4
12	How to view case summary of patient	MEDIUM	0	4
13	HOW TO ENTER THE ADDRESS OF THE PATIENT DURING REGISTRATION	MEDIUM	0	4
14	HOW TO SEND SMS REMINDER TO THE PATIENTS?	MEDIUM	0	4
15	HOW TO CHECK THE REFUND STATUS ?	MEDIUM	0	4
16	How to cancel an appointment	DIFFICULT	0	6
17	How to change Phone no. & Age of a patient	DIFFICULT	0	6
18	How to cancel a bill	DIFFICULT	0	6
19	How to make a credit note?	DIFFICULT	0	6
20	How to do partial and full amount refund?	DIFFICULT	0	6
21	How to change category of a patient registered asRegular to camp category	DIFFICULT	0	6
22	HOW TO GIVE FUTURE APPTs. To the patient if the treament is coming SRE	DIFFICULT	0	6
23	HOW TO SEE DOCTORS WISE APPOINTMENT LIST WITH CONTACT NO. FOR A PARTICULAR DATE RANGE?	DIFFICULT	0	6
24	HOW TO DO PARTIAL AND FULL ADVANCE AMOUNT REFUND?	DIFFICULT	0	6
25	HOW TO CHECK AVAILABLE SLOTS OF A DOCTOR FOR THE PARTICULAR DATES?	DIFFICULT	0	6

Appendix # 1: Questionnaire for PRE's

Questionnaire for Optician

	OPTICAL SALES PERSON		INCORRECT	CORRECT
1	How to make a Patient Order for an External Patient?	EASY	0	2
2	How do you know if an Order is sent for fitting or is received after fitting?	EASY	0	2
3	How do you receive Full Payment against a Bill?	EASY	0	2
4	How to Check your Stock?	EASY	0	2
5	How to make a Patient Order for Sunglasses?	MEDIUM	0	4
6	How to make a Patient Order for Contact lenses?	MEDIUM	0	4
7	How to Issue Sunglass/Surgery goggles to a patient?	MEDIUM	0	4
8	How to receive payment by card/credit card?	MEDIUM	0	4
9	HOW TO TAKE PATIENT ADVANCE?	MEDIUM	0	4
10	HOW TO FETCH GLASS PRESCRIPTION AUTOMATICALLY?	MEDIUM	0	4
11	HOW TO ACCEPT THE INDENT ISSUED FROM DEPOT?	MEDIUM	0	4
12	HOW TO CHECK THE STATUS OF THE PATIENT ORDER?	MEDIUM	0	4
13	HOW TO GENERATE THE BILL?	MEDIUM	0	4
14	WHEN CAN WE GENERATE THE BILL?	MEDIUM	0	4
15	How to check Daily Collection?	MEDIUM	0	4
16	HOW TO CANCEL THE PATIENT ORDER?	DIFFICULT	0	6
17	How to do give Discount and Waiver and in what Cases?	DIFFICULT	0	6
18	How to Issue a Fitted Glass to a patient?	DIFFICULT	0	6
19	HOW TO DO ENTRY FOR EXTERNAL PATIENT?	DIFFICULT	0	6
20	HOW TO REFUND THE PATIENT ADVANCE?	DIFFICULT	0	6
21	HOW TO ORDER FRAMES IN A BULK FROM DEPOT?	DIFFICULT	0	6
22	HOW TO MAKE GRN?	DIFFICULT	0	6
23	HOW TO ADD PD MARKING IN PATIENT PRESCRIPTION FOR GLASS	DIFFICULT	0	6
24	HOW TO USE BAR CODE SCANNER?	DIFFICULT	0	6
25	HOW TO CHECK ITEM CODE OF FRAMES IN HMS?	DIFFICULT	0	6

Appendix # 2: Questionnaire for Optician

Questionnaire for OTA

	Questionnaire for OT Assistant	Level	SCORE	
			INCORRECT	CORRECT
1	How to make indent to EYE Q Depot?	EASY	0	2
2	How to accept the indent issued from EYE Q Depot?	EASY	0	2
3	How to assign material to the name of patient ?	EASY	0	2
4	How to return material to central stores?	EASY	0	2
5	How to see OT stock?	MEDIUM	0	4
6	HOW TO DO IP ISSUE RETURN??	MEDIUM	0	4
7	HOW TO CHECK WHETHER IP ISSUE DONE OR NOT?	MEDIUM	0	4
8	HOW TO CHECK EACH CONSUMABLE ITEM?	MEDIUM	0	4
9	HOW TO CHECK EACH INSTRUMENT ITEM?	MEDIUM	0	4
10	WITH HOW MANY OPTIONS WE CAN FIND CONSUMABLE?	MEDIUM	0	4
11	WITH HOW MANY OPTIONS WE CAN FIND INSTRUMENT?	MEDIUM	0	4
12	HOW TO CHECK LIBRARY OF IOL?	MEDIUM	0	4
13	HOW TO CHECK IOL IN STOCK?	MEDIUM	0	4
14	BY HOW MANY WAYS WE CAN FIND STATUS OF IOL?	MEDIUM	0	4
15	HOW TO CHECK STATUS OF BOOKED SURGERIES?	MEDIUM	0	4
16	HOW TO CHECK STATUS OF CONFIRMED SURGERIES?	DIFFICULT	0	6
17	HOW TO CHECK REORDER LEVEL OF CONSUMABLE ITEMS?	DIFFICULT	0	6
18	HOW TO SET REORDER LEVEL?	DIFFICULT	0	6
19	HOW TO MARK ENTRY OF PATIENT IN OT?	DIFFICULT	0	6
20	HOW TO PREPARE DISCHARGE CARD?	DIFFICULT	0	6
21	HOW TO ORDER STOCK?	DIFFICULT	0	6
22	HOW TO CHECK WHETHER IP ISSUE DONE OR NOT?	DIFFICULT	0	6
23	HOW TO CHECK LIBRARY OF IOL?	DIFFICULT	0	6
24	How to return material to central stores?	DIFFICULT	0	6
25	HOW TO CHECK REORDER LEVEL OF CONSUMABLE ITEMS?	DIFFICULT	0	6

Appendix # 3: Questionnaire for OTA's

Questionnaire for pharmacist

PHARMACIST			SCORE	
			INCORRECT	CORRECT
1	How to Issue Medicine to patient?	EASY	0	2
2	How to return medicine from patient?	EASY	0	2
3	How to make indent to depot?	EASY	0	2
4	How to check the pharmacy stock?	EASY	0	2
5	How to accept indent from depot?	MEDIUM	0	4
6	How to return medicine to Depot?	MEDIUM	0	4
7	How to check MRP of each medicine?	MEDIUM		4
8	How to receive payment by card/credit card?	MEDIUM	0	4
9	HOW TO FETCH MED. PRESCRIPTION AUTOMATICALLY?	MEDIUM	0	4
10	How to issue medicine to external patient?	MEDIUM	0	4
11	How to track transactions of external patient?	MEDIUM	0	4
12	How to check cash on counter?	MEDIUM	0	4
13	How to open counter ?	MEDIUM	0	4
14	How to close the counter?	MEDIUM	0	4
15	How to make GRN?	MEDIUM	0	4
16	How to find records of all transactions made in a day?	DIFFICULT	0	6
17	How to fetch cashier scroll report?	DIFFICULT	0	6
18	How to generate external patient unique ID?	DIFFICULT	0	6
19	How to fetch old billing record of patient?	DIFFICULT	0	6
20	In how many ways we can find name of medicine?	DIFFICULT	0	6
21	How to check videos for help?	DIFFICULT	0	6
22	How to customize reorder level of medicines?	DIFFICULT	0	6
23	How to order new category of medicine from central store?	DIFFICULT	0	6
24	How to enter medicines in HMS batch wise?	DIFFICULT	0	6
25	How to check quantity of particular medicine in stock?	DIFFICULT	0	6

Appendix # 4: Questionnaire for Pharmacist

Questionnaire for CE

	Questionnaire for Commercial Executive		SCORE	
		LEVEL	INCORRECT	CORRECT
1	How to Generate the stock report?	EASY	0	2
2	How to add petty cash outflow?	EASY	0	2
3	How to add petty cash inflow?	EASY	0	2
4	How to print petty cash voucher?	EASY	0	2
5	How to Generate IP bill's report?	MEDIUM	0	4
6	How to Generate OP bill's report?	MEDIUM	0	4
7	How to Generate refund report?	MEDIUM	0	4
8	How to Generate cancel bill's report?	MEDIUM	0	4
9	HOW TO FETCH PETTY CASH VOUCHER FOR A PARTICULAR DATE?	MEDIUM	0	4
10	How to raise indent to EYE Q depot?	MEDIUM	0	4
11	HOW TO RAISE THE INDENT FOR OPD STORE?	MEDIUM	0	4
12	HOW TO ACCEPT THE INDENT ISSUED FROM DEPOT?	MEDIUM	0	4
13	HOW TO RETURN STOCK TO THE DEPOT?	MEDIUM	0	4
14	HOW TO CHECK ISSUE STATUS FOR AN INDENT RAISED?	MEDIUM	0	4
15	How to check stock report for previous date?	MEDIUM	0	4
16	HOW TO ISSUE ITEMS FROM THE OPD STORE?	DIFFICULT	0	6
17	How to check previous date petty cash opening balance?	DIFFICULT	0	6
18	How to update infow petty cash?	DIFFICULT	0	6
19	HOW TO CHECK OT ISSUE MRD WISE?	DIFFICULT	0	6
20	How to update outflow petty cash?	DIFFICULT	0	6
21	HOW TO TRACK THE STATUS OF A PATIENT ORDER?	DIFFICULT	0	6
22	HOW TO CHECK MEDICINES SALES TO THE PATIENT?	DIFFICULT	0	6
23	HOW TO GENERATE REORDER & DANGER LEVEL REPORT	DIFFICULT	0	6
24	How to check surgery wise revenue generated?	DIFFICULT	0	6
25	How to check revenue generated from procedures?	DIFFICULT	0	6

Appendix # 5: Questionnaire for Commercial Executive