NEED ASSESSMENT FOR A NEW HOSPITAL INFORMATION SYSTEM AT Eye-Q SUPER SPECIALITY EYE HOSPITALS

A dissertation proposal for

Post-Graduate Diploma in Health and Hospital Management

By

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PG/11/118

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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

Certificate of Internship Completion

Date: 20-04-13

TO WHOM IT MAY CONCERN

This is to certify that **'Dr.Yogita Thakral** has successfully completed her 3 months internship in our organization from January 22, 2013 to April 24, 2013. During this internship she has worked on **'Need assement for a new Hospital Information System at Eye-Q Super Specialty Eye hospital'** under the guidance of me my team at

EYE-Q Vision Private Limited.

We wish her good luck for her future assignments

(Signature)

Rahul Kumar (Name)

Manager IT Designation

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Certificate of Approval

The following dissertation titled **"Need Assessment for a new Hospital Information System at Eye-Q Super specialty Eye Hospitals "** 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
Avanish Kr. Singh	
Kirti Udayai	
Dr. Anadhi Rana	

Certificate from Dissertation Advisory Committee

This is to certify that **Dr Yogita Thakral**, a graduate student of the **Post- Graduate Diploma in Health and Hospital Management**, has worked under our guidance and supervision. She is submitting this dissertation titled "**Need assessment for a new Hospital Information System at Eye-Q Super Specialty Eye Hospitals**" in partial fulfillment 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
Assistant Professor
IIHMR
New Delhi
May 22, 2013

Signature.....

Mr. Rahul Kumar
IT Manager
Eye-Q Vision Private Ltd
Gurgaon
May 21, 2013

Signature.....

FEEDBACK FORM

Name of the Student: Ms. Yogita Thakral

Dissertation Organisation: Eye & Vision Private Ltd.

Area of Dissertation: Need assessment for new Hospital Information System at Eye-Q Super Specialty Eye Hospital

Attendance: 100 %.

Objectives achieved: Objectives were met well and on time.

Deliverables: Analysis of current software, need assessment of new HIS and vendor analysis.

Strengths: Good communication skills, ardent learner, analytical minded

Suggestions for Improvement: Always be open to learning.

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

Date: 20-04-13

Place: Gurgaon

TABLE OF CONTENTS

1.0 Introduction

2.0 Problem Statement

3.0 Rationale of Study

4.0 Review of Literature

5.0 Objectives

- 5.1 General
- 5.2 Specific

6.0 Workflow As Seen On Existing Software(Lekhi)

7.0 Limitations Of Existing Software

8.0 Methodology

- 6.1 Study Design
- 6.2 Study Area
- 6.3 Study Population
- 6.4 Sampling & Sampling Design
- 6.5 Data Collection Tools & Techniques

9.0 Study Findings

10.0 Discussion

11.0 Conclusion/Recommendations

10.0 References

11.0 Annexure

LIST OF ABBREVIATIONS

AIIMS - All India Institute of Medical Sciences

CCU - Cardiac Care Unit

CIC - Central Investigation Centre

CPRS - Computerized Patient Record System

CPOE - Computerized Physician Order Entry

CQA - Center Quality Assurance

EPR - Electronic Patient Record

HIS - Hospital Information System

HMIS - Hospital Management Information System

ICT - Information and Communication Technology

IPD - In Patient Department

IT - Information Technology

OPD - Out Patient Department

OPM - Out Patient Management

SPSS - Statistical Package for the Social Sciences

ACKNOWLEDGEMENT

First and foremost, I would like to express my sincere gratitude to my mentor, Mr Rahul Kumar, Head IT, Eye-Q Super Speciality Eye Hospitals for his constant guidance, encouragement and critique throughout my internship period.

My sincere appreciation also extends to my mentor at IIHMR New Delhi, Mrs Anandhi Ramachandran, who was a constant guide and critic throughout the making of this project.

Last but not least, I express heartfelt gratitude to everyone at Eye-Q Vision Pvt Ltd who helped me in understanding the working and nuances of the HIS , all the while lending valuable time to answer my questions. Among those were Mr Sanjay Kumar, Ms Neha Sachdeva and Ms Surabhi Arora

PROBLEM STATEMENT

Eye-Q is a growing chain of Super Speciality Eye Hospitals across the country. Being a growing chain, maintaining a centralized data store is of utmost importance.

A centralized data store will make data available to all users at all the times.

Currently, the data is not being centrally maintained. All the record keeping is being done manually. Previous day data is uploaded manually on a daily basis. And the data is then restored into the database.

So, this study aims at doing a review of the Lekhisoft software and a need assessment for a new solution to improve the workflow and the quality if work at all the present and upcoming centres of Eye-Q Super Speciality Eye Hospitals

INTRODUCTION

Eye-Q Vision Pvt. Ltd. is a chain of Super Speciality eye hospitals in various regions of the country. Presently, 20 centers are operational with many other upcoming centers.

There are four regions and these 20 centers are divided into these four regions.

The number of employees varies from centre to centre depending upon the patient flow.

The employees in the hospital are

- Patient Relationship Executives
- Optometrists
- Doctors/Consultants
- Commercial Executive
- Operation Manager
- Assistant Operation Manager
- OT technician
- Pharmacist
- Optician

Eye-Q Hospitals aims at providing quality eye care at affordable prices to the masses.

VISION OF THE HOSPITAL

To be India's foremost chain of eye hospitals in terms of both quality of eye care and number of patients treated.

MISSION OF THE HOSPITAL

To make every patient an ambassador for the brand through a combination of

- The highest levels of quality and technology in healthcare
- Exceptional personal care
- Complete integrity to the patient and his/her needs

HOSPITAL INFORMATION SYSTEM

Presently, the hospital information system being used by the hospital is Lekhisoft.

It is developed under the guidance of Dr. Rajesh Lekhi by ten software developers.

Lekhisoft is implemented at a number of eye hospitals across the country.

It is a client and server based model. There is a server at every centre and the data for a particular centre is maintained on that server.

RATIONALE OF THE STUDY

Hospital Management information system is indispensable for any hospital for strategic planning, programming, budgeting, financial resource allocation, maintaining patients' record, personnel development, distribution and management of equipment, supplies, drugs and supervision of the services. Having a good HIS is crucial for the success of hospitals now-a-days.

But an HIS is useless if it confuses the hospital employees. The system must be user friendly and should include training by the vendors. The HIS should also be patient centric, medical staff centric, affordable and scalable. The technology changes quickly and if the system is not flexible it will not be able to accommodate hospital growth. An effective HIS also delivers benefits such as:

- Enhances information integrity
- Reduces transcription errors
- Reduces duplication of information entries
- Optimizes report turnaround times

The aim of this study is to study the workflow of the hospital as seen on Lekhi, its gap analysis and the need analysis for implementation of new software at Eye-Q Super specialty eye hospitals across the centres.

This study also includes the process of vendor selection of this new software and the steps involved in the implementation of the new software at Eye-Q Hospitals.

The key modules of Electronic Health Record Software include:

1. PATIENT REGISTRATION MODULE

A user can insert/ edit the personal details of a patient with ease. The date of birth, name, age, social security number, address, insurance details, pharmacy details and guarantor details can easily be entered. This module makes it easier to access details to be used in billing and clinical modules.

2. APPOINTMENT SCHEDULING MODULE

The user can handle patient appointments with ease and also effectively manage provider schedules. Views (daily, weekly and monthly), visit profiles and scheduling templates are some of the other attractive features of this EMR software package.

3. MEDICAL BILLING MODULE

Users of our software can effectively perform medical billing options as this module has the features of medical billing software. Users can manage and print super bills. Charge entry, payments, using this module can perform complete collections and claims processing.

4. ADMINISTRATION/SECURITY MODULE

The user can setup the practice along with the required master data. Different user accounts can be created. Configurations of the software can be customized for the working of the application at a user level or at a practice level.

5. REPORTS MODULE

In this module, you can view the system reports display default reports. Users can configure and customize reports based on the access level. Physicians manage their time well and allow them to devote better time to their main concern - their patients.

OBJECTIVES

GENERAL OBJECTIVE

To review the current HIS (Lekhisoft software) from end user's perspective and assessing need for a new solution at Eye-Q Super Speciality Eye Hospitals.

SPECIFIC OBJECTIVES

1) To assess the gaps in Lekhi by mapping the workflow of the hospital as seen on Lekhi
2) To determine the problems experienced by end users i.e.-Hardware problems, Software problems, connectivity issues and others
3) To assess the need for new software at Eye-Q super speciality eye hospitals.

REVIEW OF LITERATURE

INTERNATIONAL PERSPECTIVE

1) Methods for evaluating hospital information systems: a literature review

Vassilios P. Aggelidis, Prodromos D. Chatzoglou

PURPOSE -It is widely accepted that the use of information and communication technology (ICT) in the healthcare sector offers great potential for improving the quality of services provided, the efficiency and effectiveness of personnel, and also reducing organizational expenses. This paper seeks to examine various hospital information system (HIS) evaluation methods.

METHODOLOGY – In this paper a comprehensive search of the literature concerning the evaluation of complex health information systems is conducted and used to generate a synthesis of the literature around evaluation efforts in this field. Three approaches for evaluating hospital information systems are presented – user satisfaction, usage, and economic evaluation.

FINDINGS – The main results are that during the past decade, computers and information systems, as well as their resultant products, have pervaded hospitals worldwide. Unfortunately, methodologies to measure the various impacts of these systems have not evolved at the same pace. To summarize, measurement of users' satisfaction with information systems may be the most effective evaluation method in comparison with the rest of the methods presented.

PRACTICAL IMPLICATIONS – The methodologies, taxonomies and concepts presented in this paper could benefit researchers and practitioners in the evaluation of HISs.

ORIGINALITY / VALUE – This review points out the need for more thorough evaluations of HISs that look at a wide range of factors that can affect the relative success or failure of these systems

2) **Assessing User Satisfaction of using Hospital Information System (HIS) in Malaysia**

Indah Mohd Amin et al [7]

ABSTRACT *:* Hospital Information System (HIS) has been successfully being implemented in Malaysia since 1998. However, there is little research being conducted to evaluate the level of satisfaction among the system's user. There is a need for more investigation and researches being conducted to investigate the quality of the system. The main objective of this empirical study is to investigate the level of user satisfaction of using HIS in Malaysia. The data was analyzed by using kruskal-wallis. Survey data of 248 respondents from two different hospital in Malaysia that uses similar HIS were used.The users include physicians, nurses, laboratory technologies, pharmacists and others

The results show that there are significant differences between different types of users for HIS in Malaysia in terms of the (i) quality of HIS interface, (ii) quality of HIS Function, (iii) quality of HIS Performance and (iv) quality of HIS (combination of HIS interface, HIS Function and HIS Performance). Thus, provide indication for customization and better understanding for different type of HIS users to improve the quality of HIS from end-user's perspectives. HIS managers and developers may attain benefits from this study towards better understanding of the different requirements and level of satisfactions among HIS's users. The result can be used a guidance to improve the quality of HIS and meet different expectations and demands from different types of HIS users. It is important to
be able to quantify user satisfaction to justify the cost, implementation time, user involvement and testing in the development, implementation and maintenance stage of HIS. Collaboration with the users, training and support by the technical personnel may well be feasible for future HIS development methodology and implementation.

- Hospital Information Systems User Needs Analysis: A Vendor Survey

Mehrdad FARZANDIPOUR, Farahnaz SADOUGHIb and Zahra MEIDANIc
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b) Associate Professor of Health Information Management of Tehran University of Medical Tehran, I.R. Iran Sciences, Tehran, I.R. Iran
c) PhD Candidate in Health Information Management. Tehran University of Medical Sciences**,**

Abstract. This study was conducted to evaluate the hospital information system (HIS) software based on user requirements in Iran. Through a descriptive study 5 vendors which had the best selling software products among the university hospitals were selected. HIS softwares were evaluated based on checklist and through the observation in 8 hospitals according to defined criteria. SPSS and descriptive statistics were employed to analyze the collected data.
Maximum user's expectations were supported by Tarrahan Boali. However, Tarrahan Bali has not efficiently met user expectations in all departments; medical records (74.5%), pharmacy (58.6%), laboratory (74.5%), nursing (23.3%), radiology (51.4%) and financial (65.4%). Minimum user requirements (29%) have been met by Microafzar Qeshm.
There was no HIS software to meet the end users expectations in all departments completely. Failure to meet the user expectations among software that addresses all user expectations appropriately could be ascribed to poor user participation and revealed that HIS adoption in Iran

is still in infancy. Conducting periodical evaluation; employing a comprehensive tool for HIS evaluation is crucial to ensure their effective implementation and improvement.

The Indian Perspective:

1) Hospital Information System in Medicare – An Experience at Tata Main Hospital,Jamshedpur

Mohanty Rajesh, Rana Sarosh D, Kolay Saroj K

ABSTRACT: Hospitals are the key institutions in providing relief against sickness and disease. They have become an integral part of the comprehensive health services in India, both curative and preventive. Significant progress has been made in improving their efficiency and operations. Effectiveness of a health institution - hospitals or nursing homes, depends on its goals and objectives, its strategic location, soundness of its operations, and efficiency of its management systems. The administrator's effectiveness depends upon the efficiency with which he is able to achieve the goals and objectives. Some of the major factors determining the effectiveness of a health institution include patient care management and patient satisfaction. Hospitals are very expensive to build and to operate. Administrators and professionals have to be extremely cost conscious. Effective computerized systems and procedures need to be implemented to ensure proper utilization of limited resources toward quality health care. It becomes even more important when an in-house medical facility is provided by an industry for its employees, as is the case for Tata Steel. Patient care management in Tata Steel has fully utilized the power of computers in Medicare, whereby network of integrated systems maintaining patient database for the hospital services in the areas of Pathology, Radiology, Medical Research, In-patient Admissions and Billing, Medical Stores & Pharmacy are operational. The implementation of the above modules has evolved user-friendly computerized systems which are loved and cared by all.
This paper tries to cover giving an insight to the Hospital Information system implemented at the Tata Main Hospital, which is being fully utilized to provide quality service. The computerized system has enabled the medics to serve their customers with a smile and to meet the corporate objective set by the founder.

METHODOLOGY ADOPTED: As per the ISO 9000 standards a Project
team was formed for monitoring and managing the computerization project on schedule. The team comprised of Head of Departments, Key users consisting of doctors, Accountants etc, each from various functional areas along with IT personnel. General Manager (Medical Services) called sponsor set directives and reviewed project. Technical guidance was provided by Senior IT personnel. The project execution methodology was carefully designed to incorporate almost all the essentials of comprehensive methodology of ITS, which is an ISO 9001 certified

Unit. Main emphasis is given to Joint Application Development (JAD) where approach was participative, user driven, highly interactive, stress on quality, use of productive tools, phase approach etc. Each phase end was certified by key users, Steering Committee members, and finally by Central Quality Assurance (CQA) group at ITS.

CONCLUSION: It can thus be seen that deploying IT can help the medical profession in improving its quality of service and thus automatically increasing the preparedness and

defensiveness. Of course, it is of vital importance that the software must have the right type of modularity and openness so that it is manageable, maintainable and upgradable. The hardware should also be reliable, available and have the necessary performance capacity. Certainly,

computers with their intrinsic power can play a major role in a hospital. Computers can act as a communication link between departments and allows the common database to be shared by

them. They can perform the complex task of matching, tabulating, calculating, retrieving, printing and securing the data as required. Well designed, integrated computer system can be a great tool in the hands of the hospital management in improving services, controlling cost, and ensuring optimal utilization of facilities.

3) Evaluation of computerized health management information system for primary health care in rural India.

Krishnan A et al

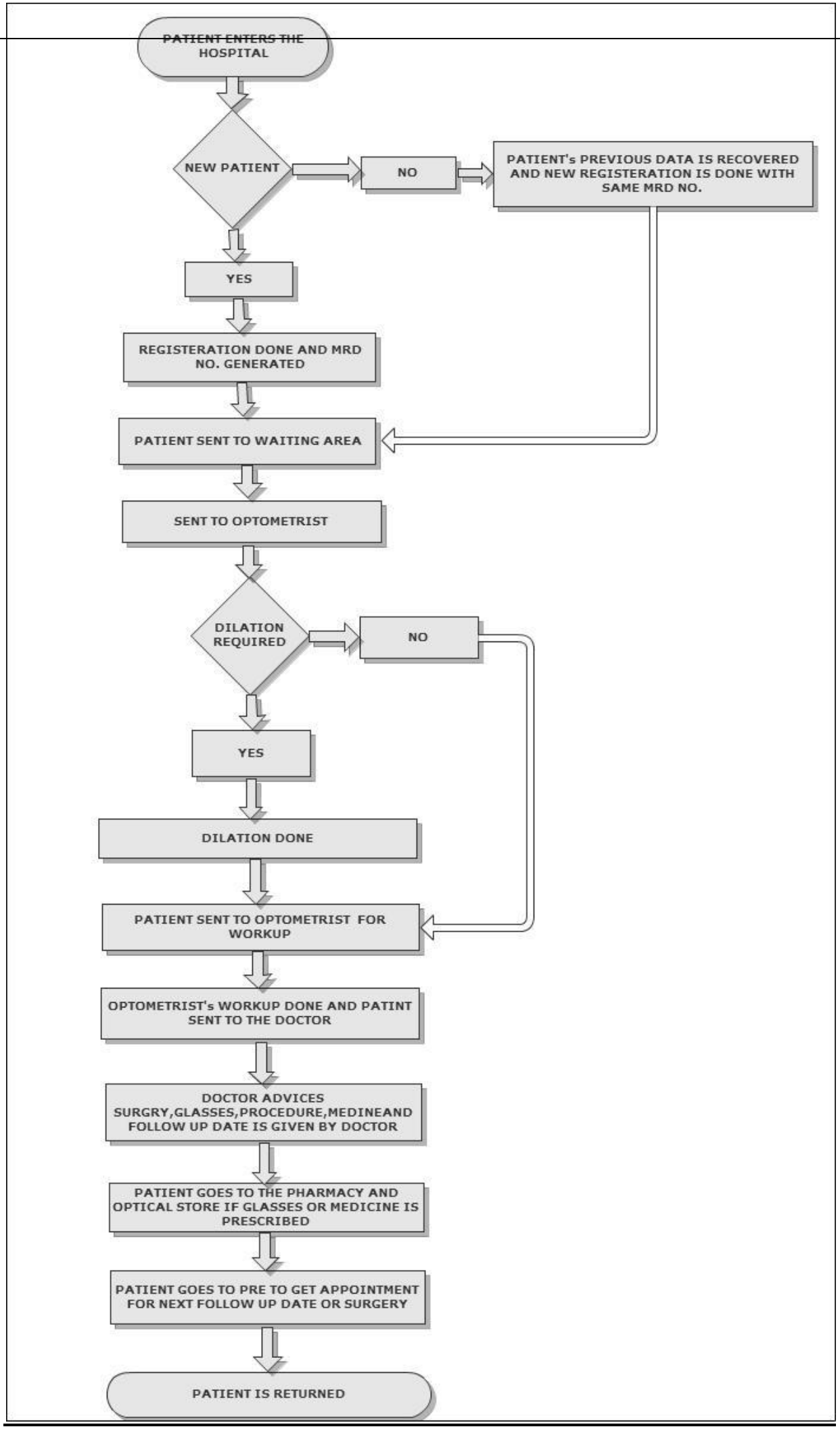
BACKGROUND: The Comprehensive Rural Health Services Project Ballabgarh, run by All India Institute of Medical Sciences (AIIMS), New Delhi has a computerized Health Management Information System (HMIS) since 1988. The HMIS at Ballabgarh has undergone evolution and is currently in its third version which uses generic and open source software. This study was conducted to evaluate the effectiveness of a computerized Health Management Information System in rural health system in India.

METHODS: The data for evaluation were collected by in-depth interviews of the stakeholders i.e. program managers (authors) and health workers. Health Workers from AIIMS and Non-AIIMS Primary Health Centers were interviewed to compare the manual with computerized HMIS. A cost comparison between the two methods was carried out based on market costs. The resource utilization for both manual and computerized HMIS was identified based on workers' interviews.

RESULTS: There have been no major hardware problems in use of computerized HMIS. More than 95% of data was found to be accurate. Health workers acknowledge the usefulness of HMIS in service delivery, data storage, generation of work plans and reports. For program managers, it provides a better tool for monitoring and supervision and data management. The initial cost incurred in computerization of two Primary Health Centers was estimated to be Indian National Rupee (INR) 1674,217 (USD 35,622). Equivalent annual incremental cost of capital items was estimated as INR 198,017 (USD 4213). The annual savings is around INR 894,283 (USD 11,924).

CONCLUSION: The major advantage of computerization has been in saving of time of health workers in record keeping and report generation. The initial capital costs of computerization can be recovered within two years of implementation if the system is fully operational. Computerization has enabled implementation of a good system for service delivery, monitoring and supervision.

CURRENT WORKFLOW


PATIENT ENTERS THE HOSPITAL
NEW PATIENT
NO
PATIENT's PREVIOUS DATA IS RECOVERED AND NEW REGISTERATION IS DONE WITH SAME MRD NO.
YES
REGISTERATION DONE AND MRD NO. GENERATED
PATIENT SENT TO WAITING AREA
SENT TO OPTOMETRIST
DILATION REQUIRED
NO
YES
DILATION DONE
PATIENT SENT TO OPTOMETRIST FOR WORKUP
OPTOMETRIST's WORKUP DONE AND PATINT SENT TO THE DOCTOR
DOCTOR ADVICES SURGRY,GLASSES,PROCEDURE,MEDINEAND FOLLOW UP DATE IS GIVEN BY DOCTOR
PATIENT GOES TO THE PHARMACY AND OPTICAL STORE IF GLASSES OR MEDICINE IS PRESCRIBED
PATIENT GOES TO PRE TO GET APPOINTMENT FOR NEXT FOLLOW UP DATE OR SURGERY
PATIENT IS RETURNED

As soon as the patient enters the hospital, he/she goes to the reception where a MRD No. for a particular patient is created by the PRE (Patient Relationship Executive).

The MRD No. remains same all through the patient's life.

Once the patient is registered, he/she is asked to wait in the waiting area.

After this the patient is called in the optometrist's room for the work up.

Optometrist checks the patient and see is dilation is required for a particular patient.

If dilation is required, the patient is sent back to the waiting area and dilation is done.

After this, the patient is called in the optometrist's room again for the work up.

After the optometrist's work up is completed the patient is asked to wait again and then called by the doctor.

The doctor then checks the patient and prescribes medicine, surgery, glasses, procedures etc.

If the patient has been advised surgery or procedure, he/she will be given a date on which the surgery is o be performed.

The patient then goes to the PRE and gets an appointment for the next surgery/procedure visit.

If the patient has been advised glasses or medicine, he/she goes to the optical counter or the pharmacy.

The patient then goes to the PRE to get next appointment.

The patient is then returned.

WORKFLOW AS SEEN ON LEKHI

As soon as the patient enters inside the hospital, he/she gets registered by PRE into the software

After registration, the patient is dilated if necessary.

After dilatation the patient is sent to the optometrist.

There are two records of the patient in the optometrist's column.

There are two case sheets:

Case sheet 1 and Case sheet 2

Case sheet1 includes the entire patient's Demographic data, Systemic history, Previous glasses details, Frequency of usage of glasses, Family history etc.

Case sheet 2 includes all the details including the procedure details of the tests happened in the last visits, refraction details of the patient, NCT details, IOP details, various scans like: A Scan, B Scan etc.

After completing both the Optometric columns, the patient is sent to the doctor by choosing the option "send to the doctor". The optometrist then chooses the name of the doctor whom the patient will be getting treatment from.

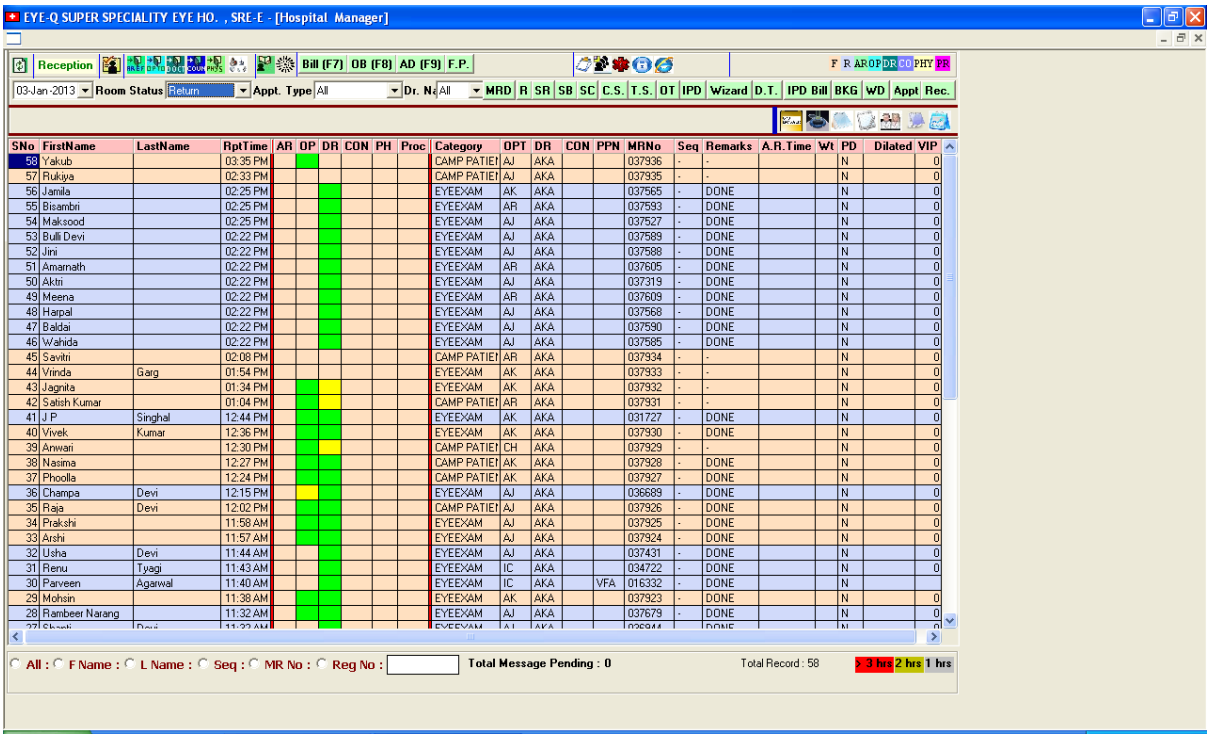
The doctor then clicks on the patient and then the green arrow and takes the patient in his chamber. And then the doctor clicks on the doctor's column which opens the sheet in front of the doctor where the patient's record has to be entered.

This includes details like patient's optometric details, which can be seen by the doctor.

In addition to this it includes the details of the tests done by the doctor in the chamber.

The procedures and tests advised by doctor in the chamber. The doctor advices tests to patient. The procedures which the patient need to undergo and the reports of the tests which are done by the doctor in his/her chamber. The refraction details of the patient and test prescribed to the patients

It involves the details of the patient who has all the data involved.



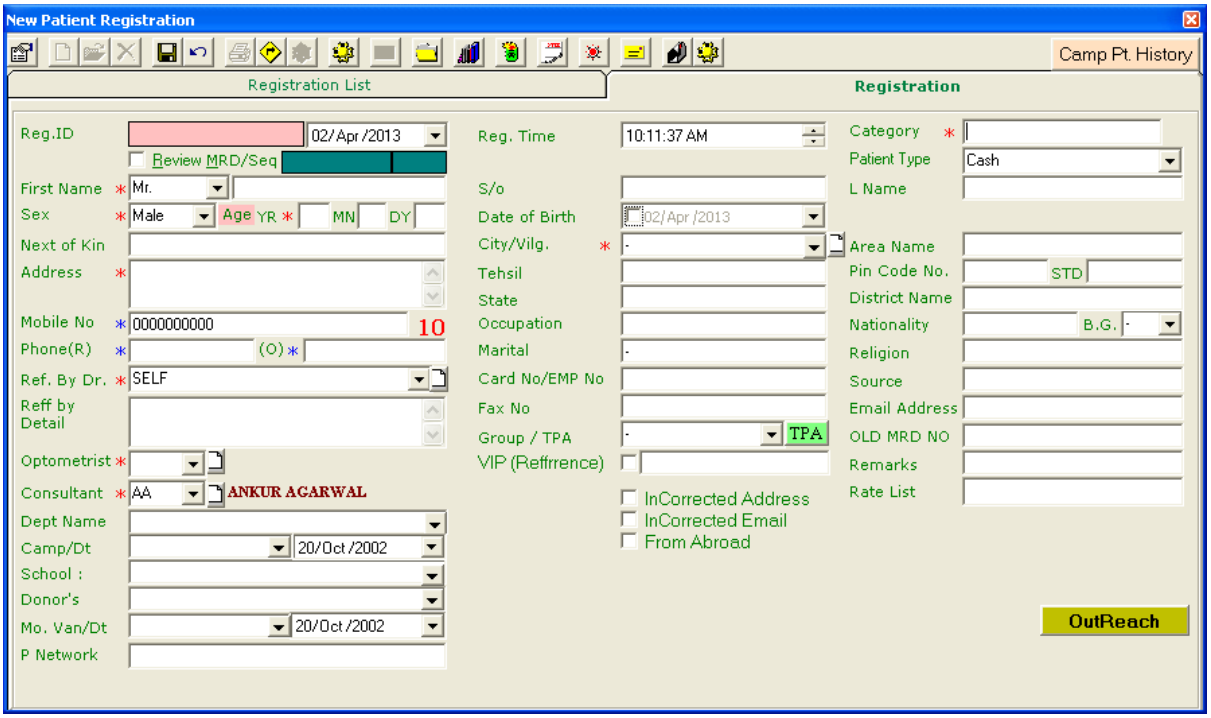
As soon as the user logs in to the system, a screen showing all the patients who are in the hospital appears.

The different colour codes show which room is the patient in right now.

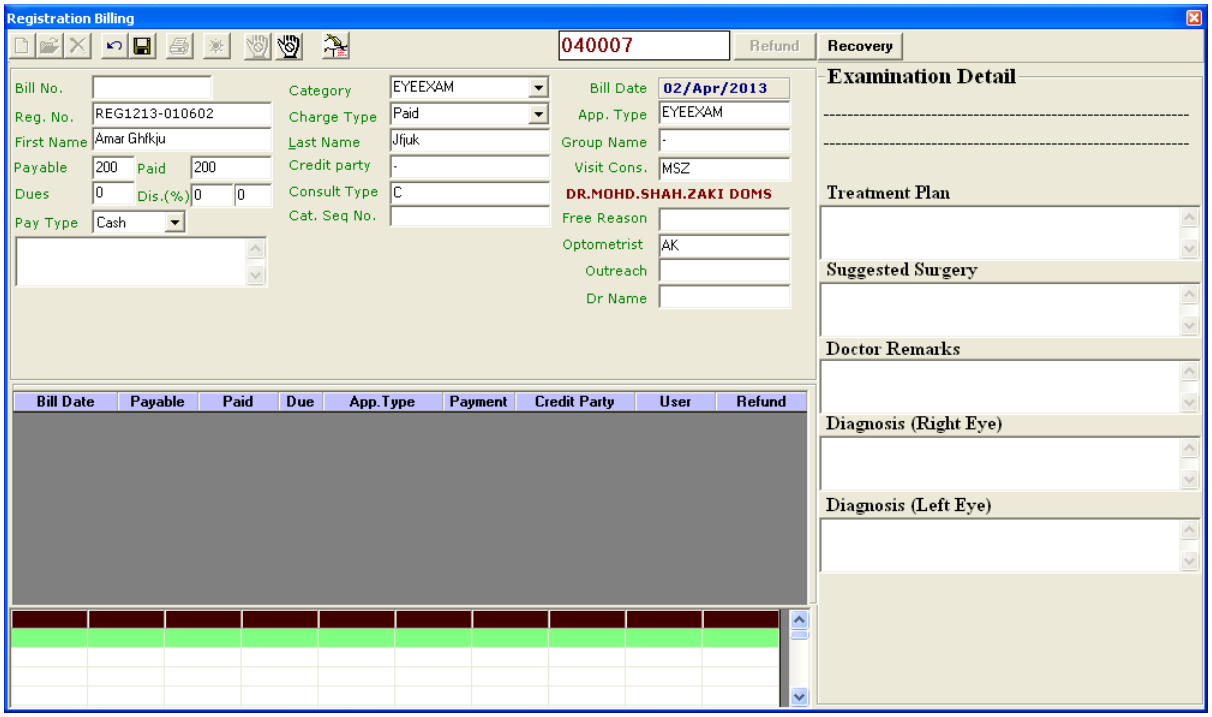
There are different colour codes which indicate where the patient is right now.

The list shows the Serial No., First name, Last Name, Category, Department, and Remarks etc.

To register a new patient click on new patient, enter the details of the patient like-name, age sex, address, source, category, contact number, name of optometrist, name of the consultant etc.



And the MR No. is then automatically generated. After this the record is saved and the billing column is opened automatically, where the system takes the OPD Registration fee for a particular doctor automatically. The billing details are then saved.

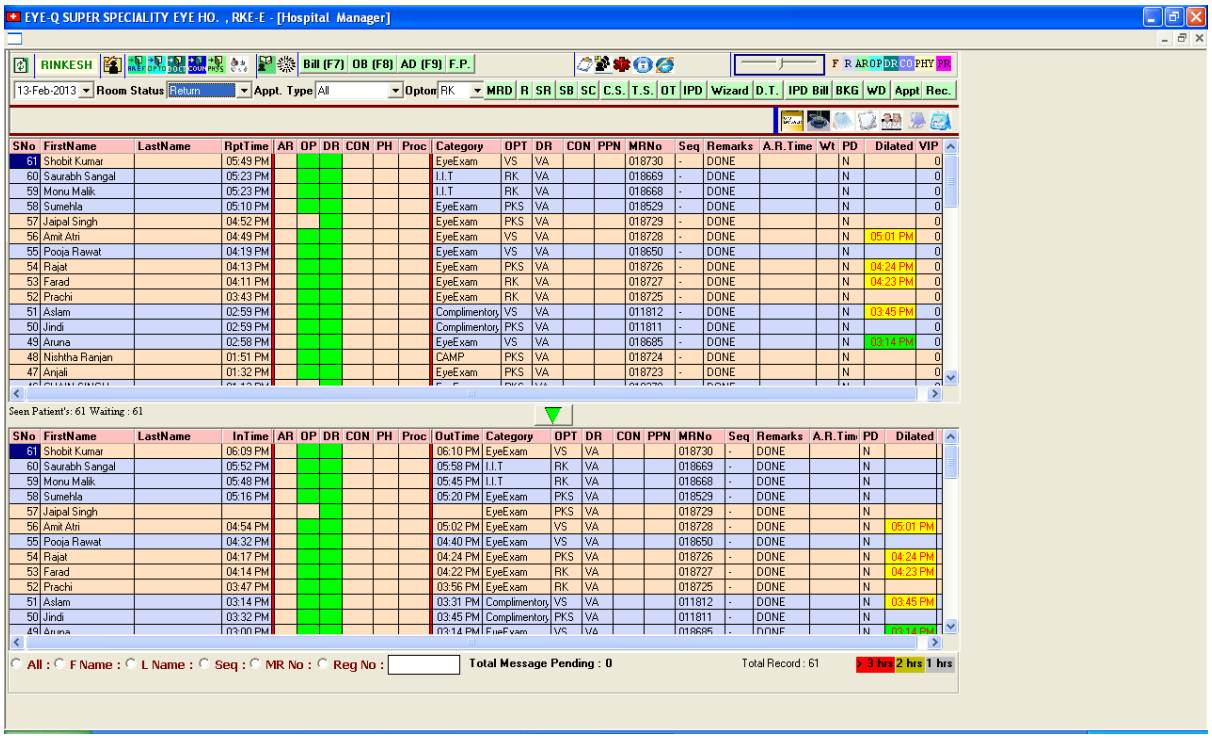


In case the patient is a free patient (camp patient or complimentary patient), reason for giving free treatment to the patient is also mandatory to enter into the system.

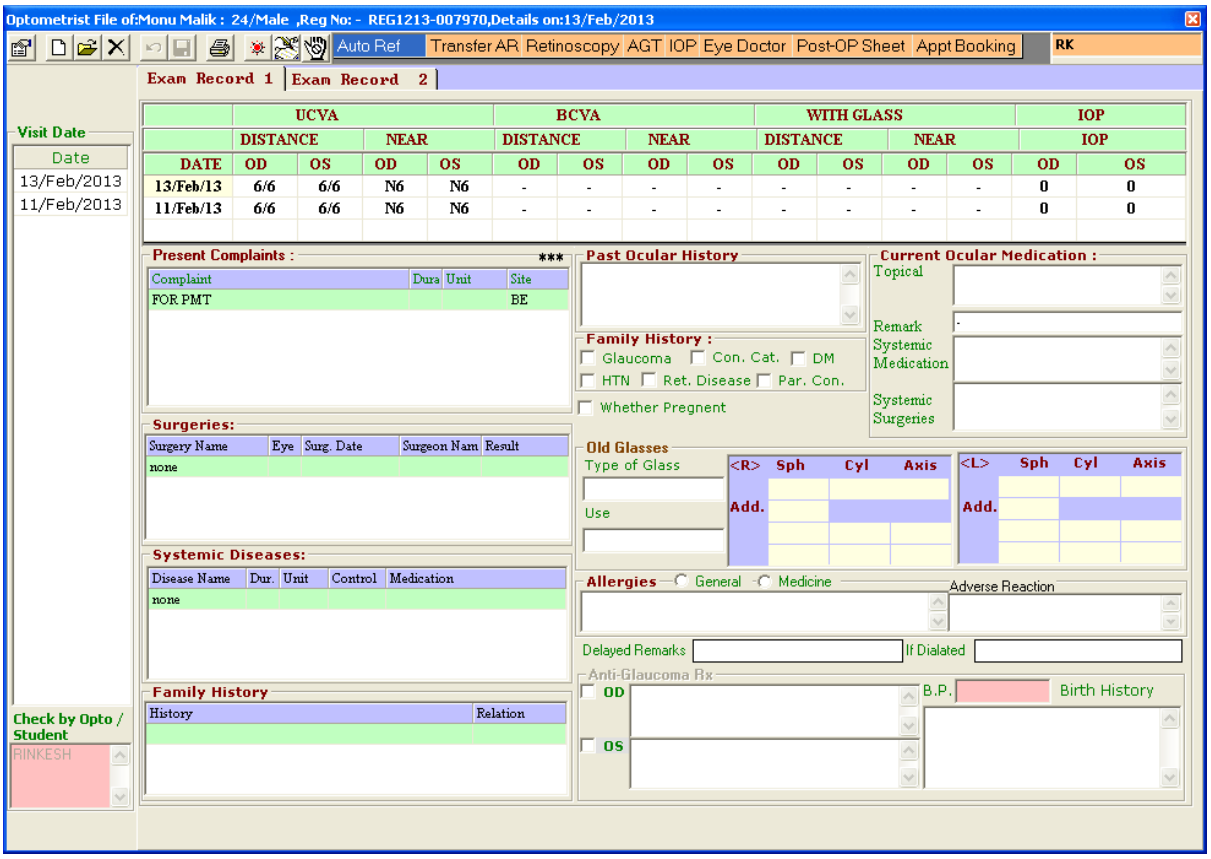
After entering the details, the data is then saved.

The patient is then sent to the reception automatically.

The PRE then send the patient to the Optometrist.

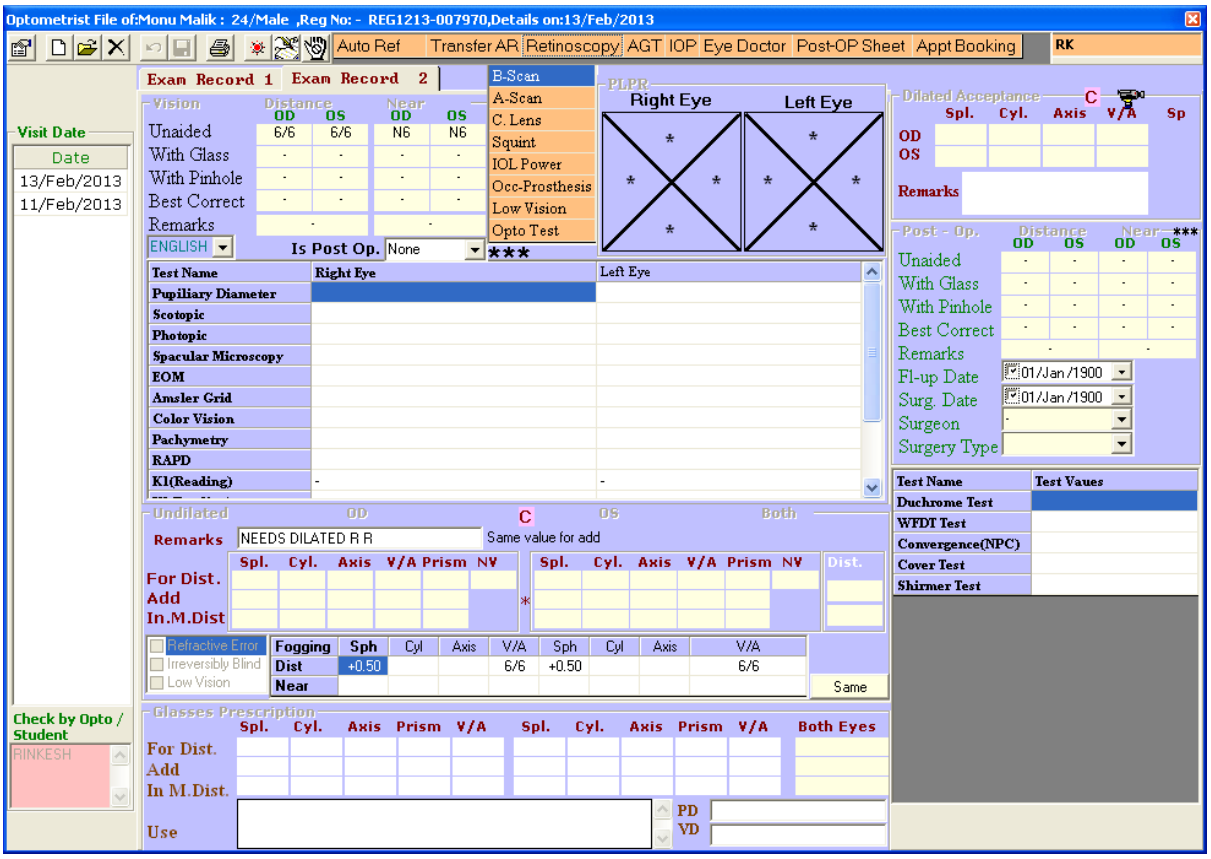


Optometrist fills the patient details in the sheets.



Exam record 1 includes all the patient's history and details like

- Present complaints
- Past Ocular history
- Surgeries
- Systemic diseases if any
- Family history
- Current ocular medicine
- Allergies etc.

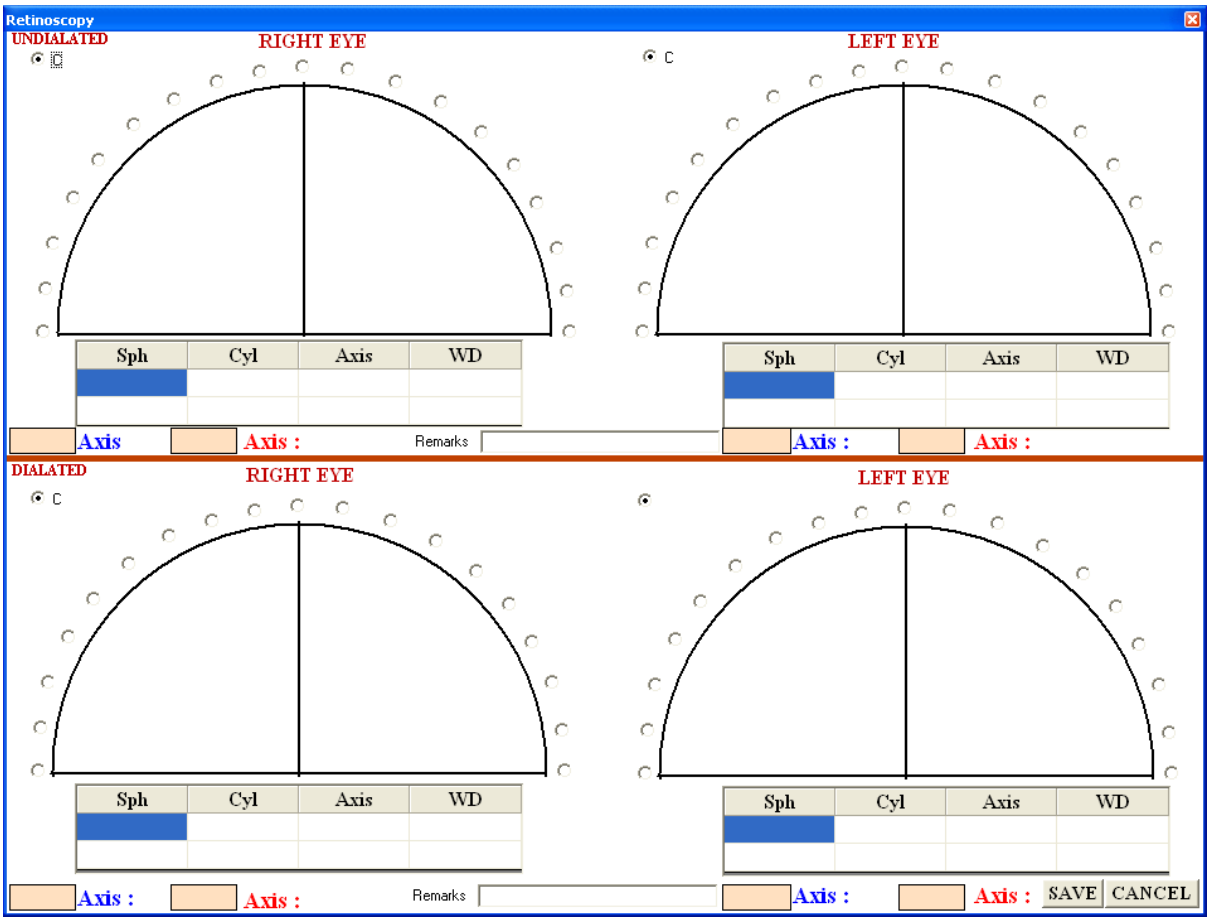


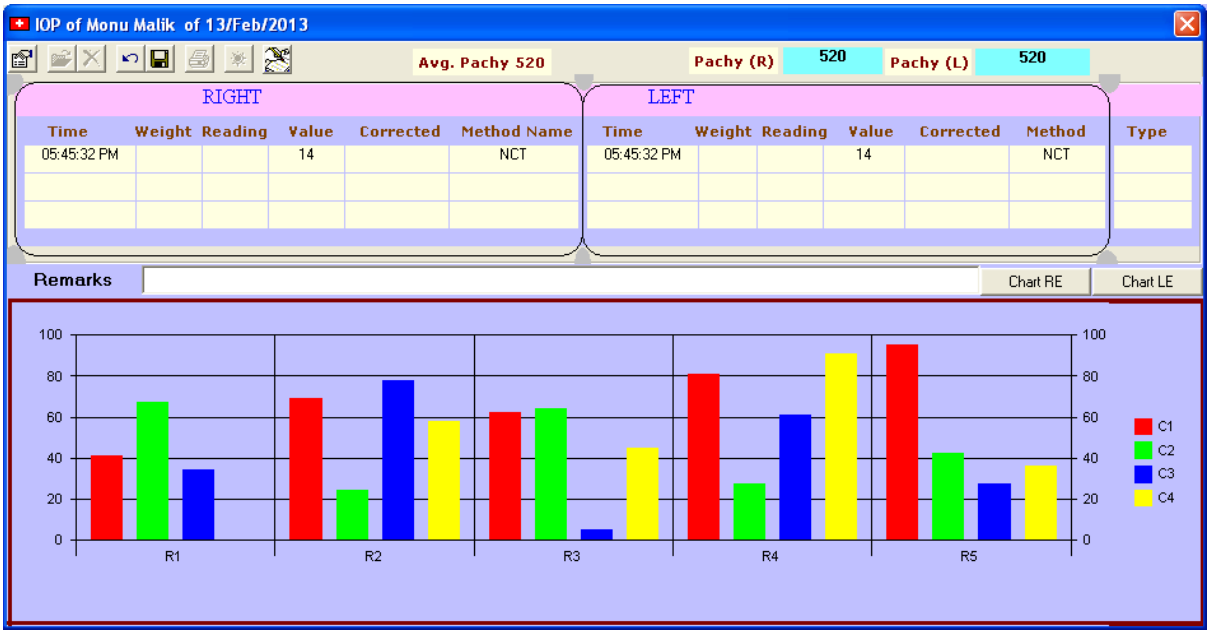
Exam record 2 includes the patient's all ocular data like:

- Refraction details
- NCT Details
- Vision of the patient without glasses, with glass, with pin hole, best correct
- Procedure details like-A scan, B scan, C lens, Squint, IOL power, Opto test,
- Test Details e.g.- Duchrome Test, WFDT test, Convergence, Shirmer test, Cover Test,

After the optometrist enters all the details of the patient into the system, the record is saved.

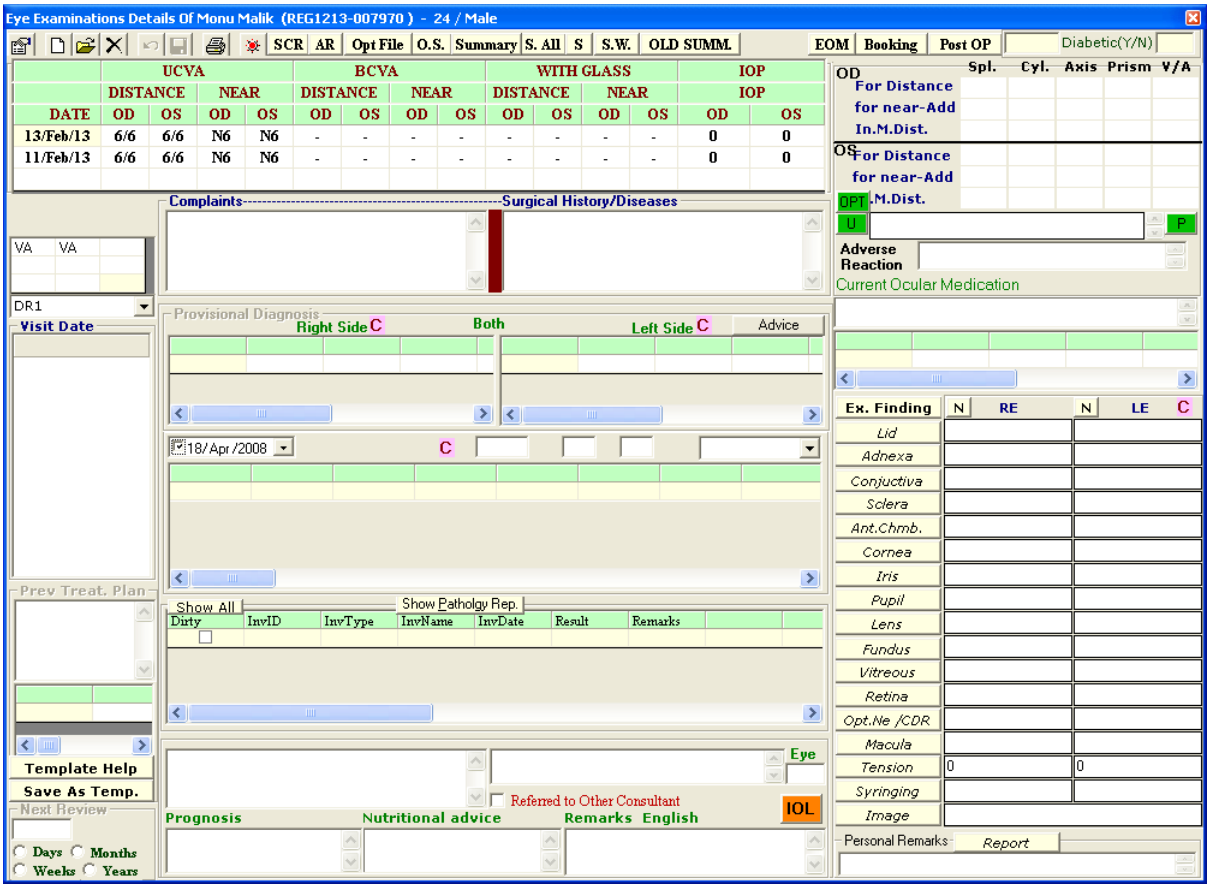
After the optometrist's records have been completed, the optometrist sends the patient to the doctor.


Retinoscopy
UNDIALATED
RIGHT EYE
LEFT EYE
Sph
Cyl
Axis
WD
Axis :
Remarks
DIALATED
SAVE
CANCEL


IOP of Monu Malik of 13/Feb/2013
Avg. Pachy 520
Pachy (R) 520
Pachy (L) 520
RIGHT
LEFT
Time
Weight
Reading
Value
Corrected
Method Name
Method
Type
05:45:32 PM
14
NCT
Remarks
Chart RE
Chart LE
100
80
60
40
20
0
R1
R2
R3
R4
R5
C1
C2
C3
C4

The doctor’s record includes various details like:

- Diagnosis
- Treatment plan
- Advised procedures
- Advised tests
- Advised surgeries
- External findings like- Lid, Adnexa, Conjunctiva, Sclera, Cornea, Anterior chamber,



The details are then saved by the doctor, and the patient is sent to the counsellor if any surgery is advised to him.

In the counsellor’s record, the counsellor’s ID is automatically generated

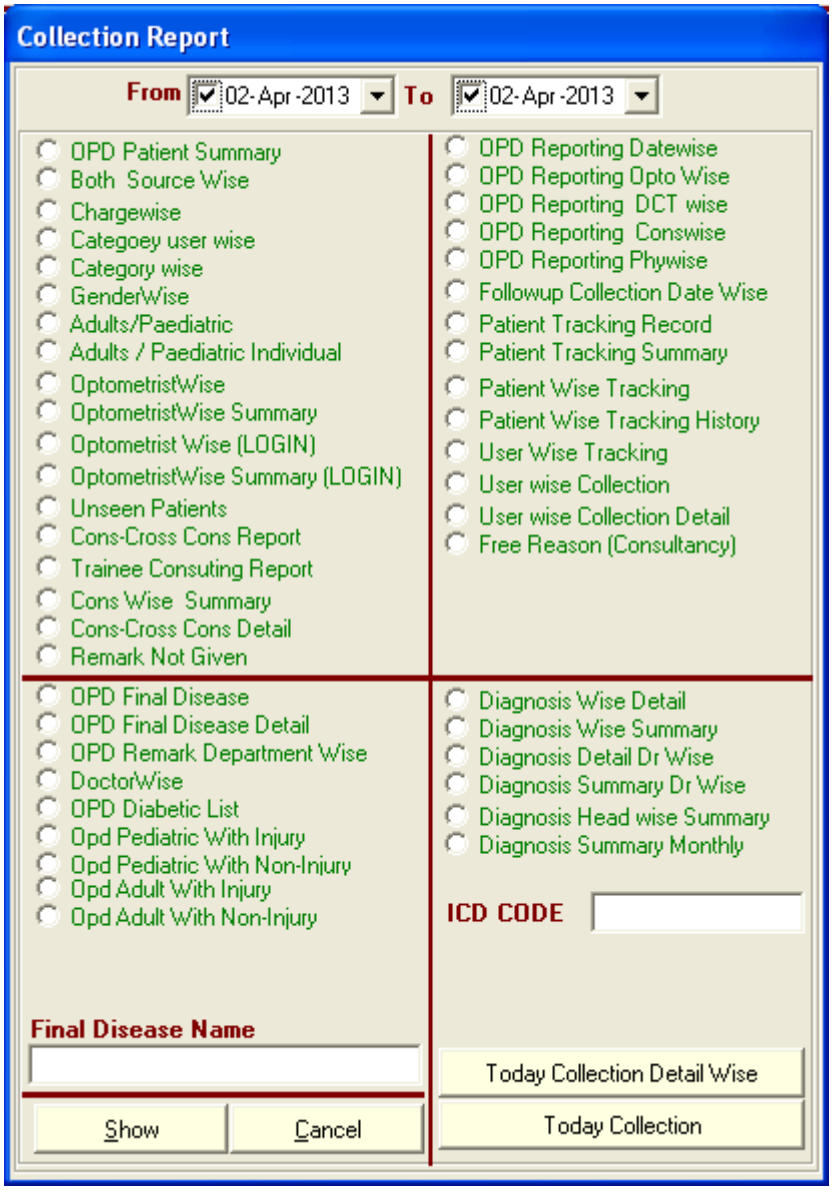
The counsellor then enters the type of the operation and the package details which include the package type and the charges, date of booking, date and time of surgery etc.

The appointments are also booked with the software. Appointments can be-telephonic, in person or the other appointments.

The patient details are entered into the system by the PRE while giving the appointment and then the time is chosen. The time slots are already present in the system. Appointments are given in time duration of 10 minutes. There are slots being given which allow appointment to be made at an interval of 10 minutes.

There are various reports which can be prepared from the software.

Like,



- Today's collection
- OPD collection Date wise
- OPD collection Date wise summary
- OPD reporting Opto wise
- OPD reporting Doctor wise
- Diagnosis wise Detail
- Diagnosis wise Summary
- Diagnosis Detail Doctor wise
- Diagnosis Summary Doctor Wise

- OPD patient summary
- Doctor Wise
- Charge Wise
- Category Wise
- Gender Wise
- OPD Final disease
- OPD Final Disease summary
- Patient tracking record
- Patient tracking summary

- User wise tracking
- User wise summary

In addition to these, there are several other reports as well, e.g. - Administration Reports, Daily C.R.M Reports, Revenue Sheet , Daily MIS etc.

Daily CRM reports, Revenue sheets, Daily MIS, Administration reports

There are various categories of the reports as well. Like, OPD Reporting date wise, OPD reporting physician wise, Total OPD etc.

Surgery Booking is also done in Lekhi. Surgeries are booked with an option on the main page and also by the counsellor.

The surgeries are booked by entering the patient's MR Number; his/her package name, package charges and the details of the patient in the system

There are several other reports which are extracted from the system like-

Advised summary by consultant- It displays the summary if the advised surgeries etc. by the Doctor in a list

Doctor Wise advised- It displays the list of procedures or surgeries advised by the doctor in a list with the name of the doctor who advised

Doctor Wise advised summary- It displays a summary of the results advised by the doctor

Opto wise advices- Consists of a list of surgeries advised by the optometrist with their names

Advised surgery daily- Has a list of surgeries advised daily by a particular doctor

Advised surgery monthly- Consists of a list of surgeries advised in a month by a particular doctor

Converted surgery record date wise – Consists of a list of surgeries which are converted by the counsellor in a given period of time

Converted surgery record counsellor wise - shows the number and details of surgeries converted by the counsellor in a particular point of time

Direct patient surgery advised- Shows the surgeries advised to the patient directly by the doctor

A Quantitative Study was done to list and analyze the problems in the system.

A questionnaire was prepared in the excel sheet which listed all the problems which can be faced by the end users.

These problems included:

- Hardware Problems
- Software Problems
- Connectivity Issues
- Others

All the users had to choose the problem he/she is facing from a drop down menu which included the list of problems possible.

The data collected included the:

- Problem faced
- Problem faced by(at what end)
- Problem faced at(name of the centre)
- Date when the problem was encountered
- Function resumed on
- Downtime
- Remarks by OM

The same sheet included details from the IT Staff as well

The questions included:

- Problem In
- Problem Diagnosed
- Intervention done
- Remarks if any(by IT personnel)

METHODOLOGY

Study design: Cross sectional, Analytical

Study area: Eye-Q Super speciality Eye Hospitals (across 18 centres)

HARYANA REGION

- DLF
- NRR
- Rewari
- Hisar
- Rohtak
- Fatehabad
- Bhiwani

DELHI REGION

- Saharanpur
- Yamuna Nagar
- Haldwani
- Muzaffarnagar
- Roorkee
- Meerut

SURAT REGION

- Randher road
- Udhna

LUCKNOW REGION

- Gomti Nagar
- Vijay Nagar
- Aliganj

Study population: Doctors / consultants, Patient Relationship Executives, Pharmacists, Optician, Operation Managers, Optometrists, Commercial Executives

Sampling and sampling design: This study was conducted across all 18 centres at Eye-Q Super speciality Eye Hospitals.

Employees from various departments, who use Lekhi, were selected as study participants.

400 responses were received from the users over a period of two months which were then categorized and then analyzed

Data Collection Tools and Techniques:

A questionnaire was developed in the form of an excel sheet which included questions as per the objectives of the study.

Different problems which a user can face were listed and the location and end where the problems were being faced were collected including the date when the problem was faced and the date when the problem resumed.

The data was entered for the user who faced the problem and the entire data sheet which included the problems faced at all ends was collected at the end of the month.

The data for two months was collected and analyzed

Participants were explained in detail regarding the purpose of the study; informed consent was obtained and questionnaires were distributed.

Information thus obtained from the above questionnaire was entered in SPSS software and analyzed.

STUDY FINDINGS

The Downtime data was collected for a period of two months and the data analysis was done twice on each month's data.

All the problems were divided into categories.

Various problems which were faced are listed below:-

1) SOFTWARE PROBLEMS

- Lekhi is not working at User end
- Lekhi is not responding at server and user end
- Lekhi Frequently Shuts down in a day
- Tally server not responding
- Tally not working at user end

2) HARWARE PROBLEMS

- Planned Downtime-Hardware Upgradation
- Planned Downtime-Software Upgradation
- Planned Downtime-Clean Up
- System not starting
- System Reboots Frequently
- Slow Performance/Hangs Frequently
- Monitor Going Blank
- Monitor does not lit up
- Keyboard not working
- Mouse not working
- Laptop not working
- System shuts down as no UPS Back Up
- Network printer not working
- Standalone printer not working
- Unable to access printer

3) CONNECTIVITY ISSUES

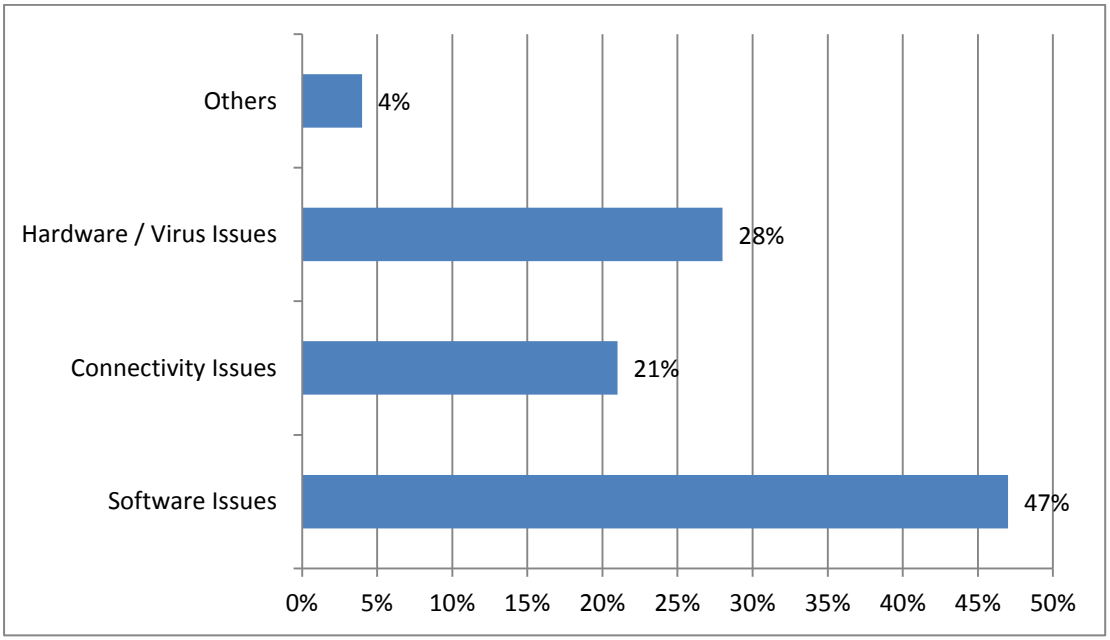
- Internet Link Down
- Slow Speed of Internet
- Unable to connect to Internet(LAN Cable)
- Unable to detect or access WI-FI

4) OTHERS

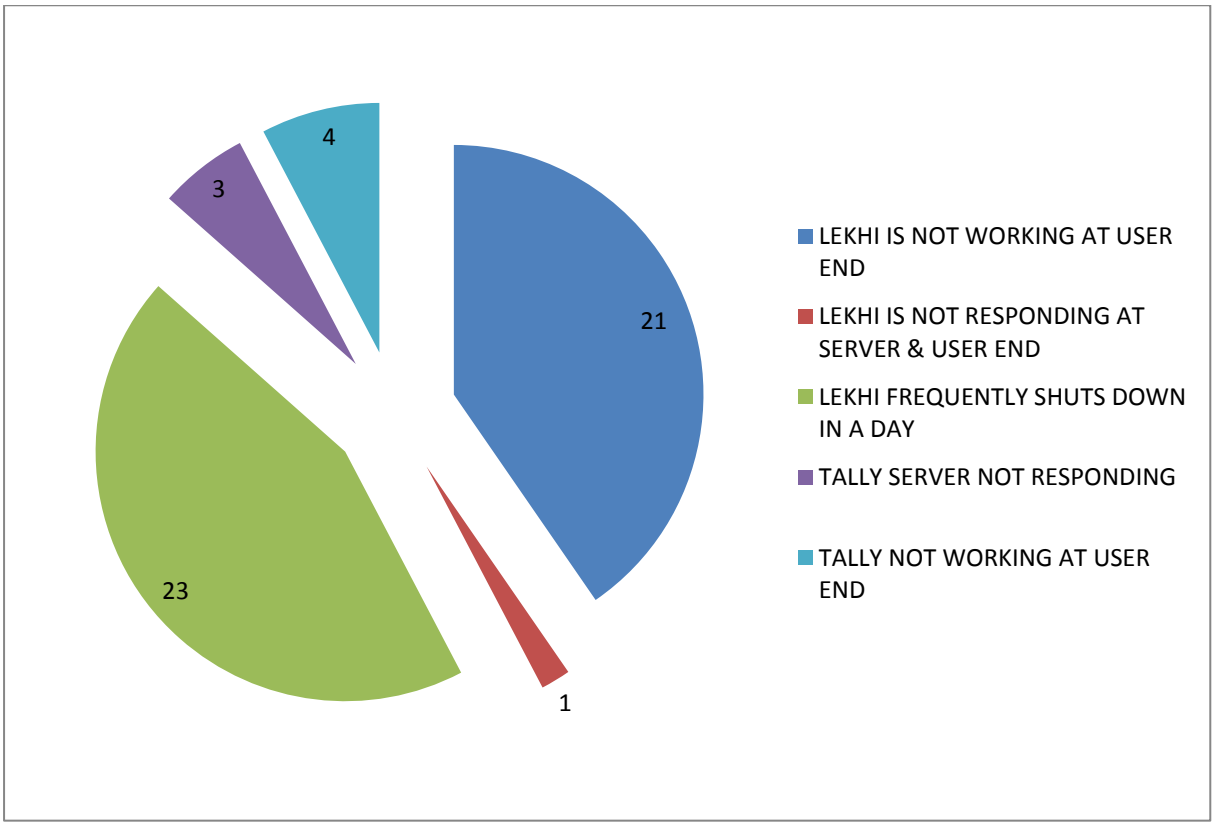
- Not able to access shared folder
- Not able to restore data back up
- Not able to take data back up
- Not able to send back up

RESULTS

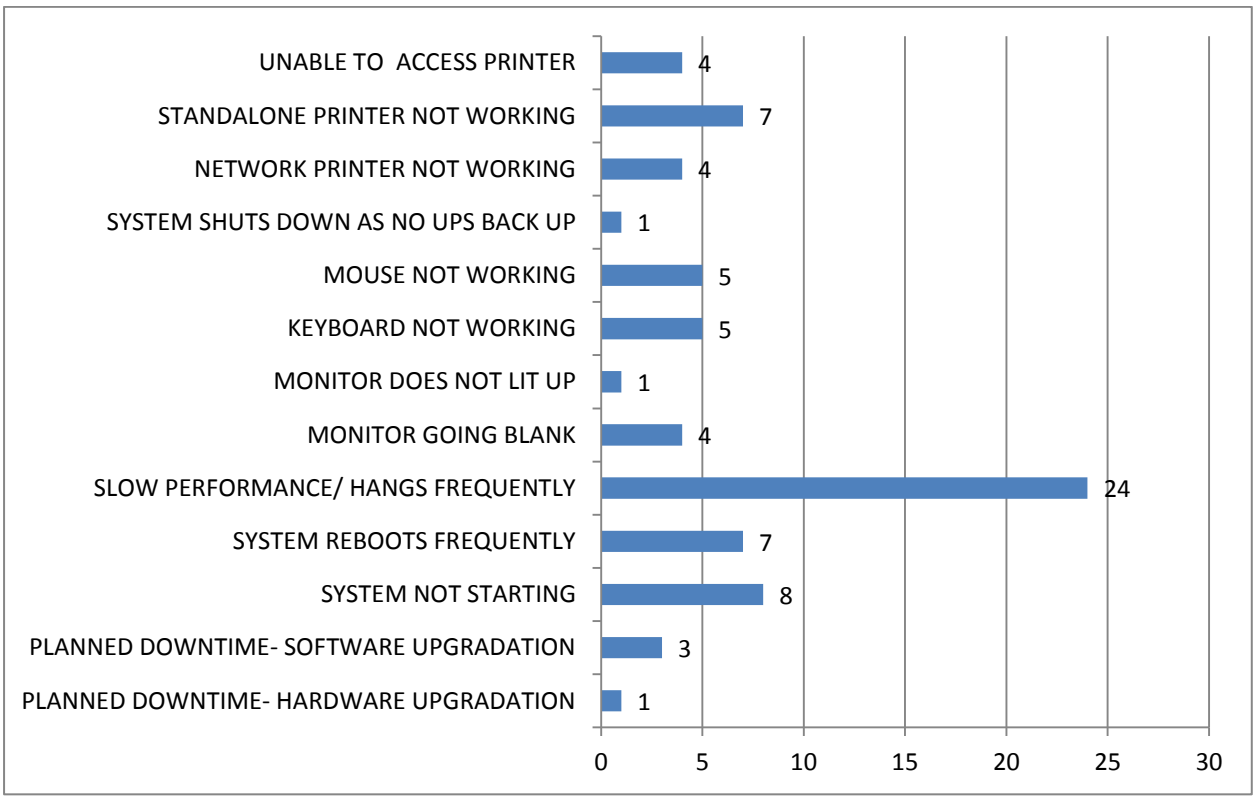
MONTH 1



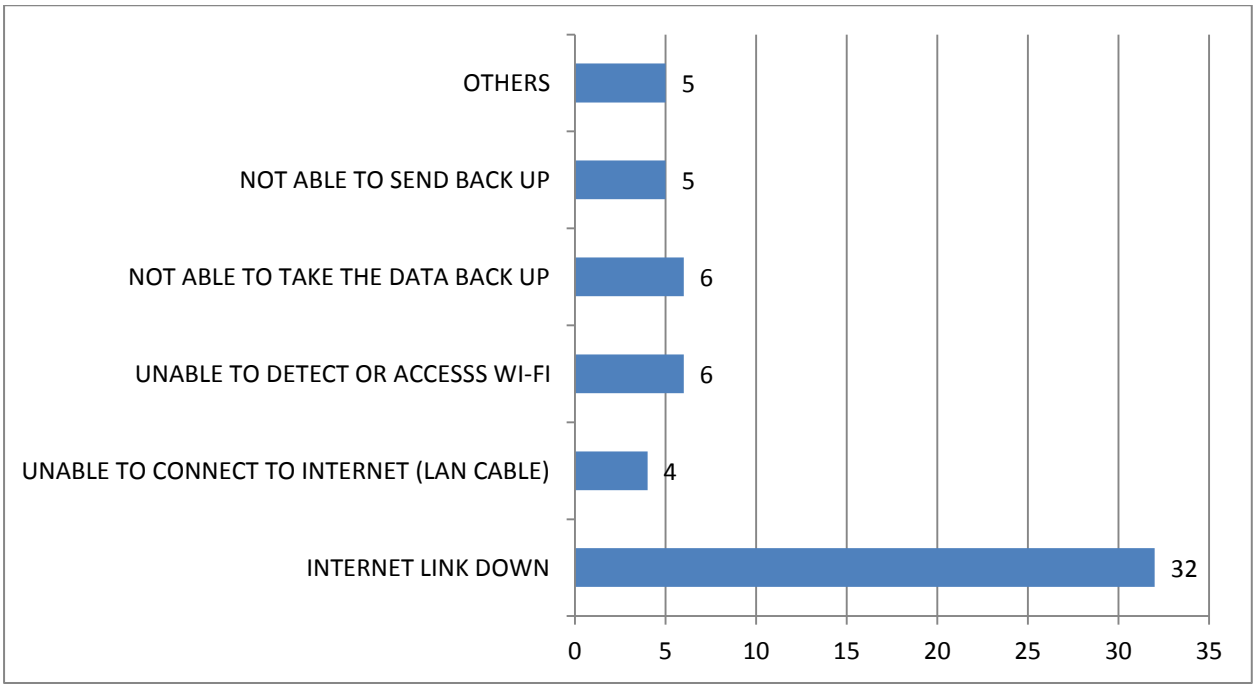
SOFTWARE ISSUES



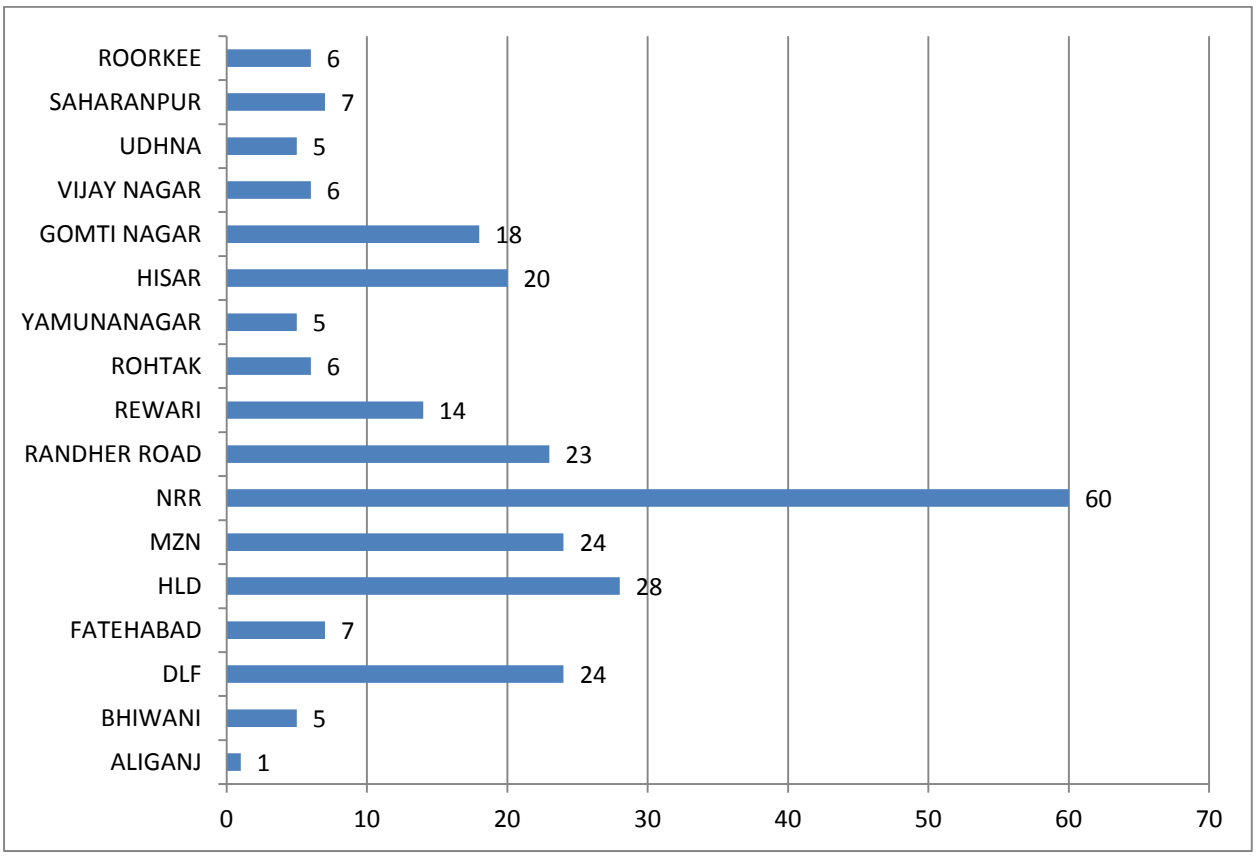
HARDWARE ISSUES



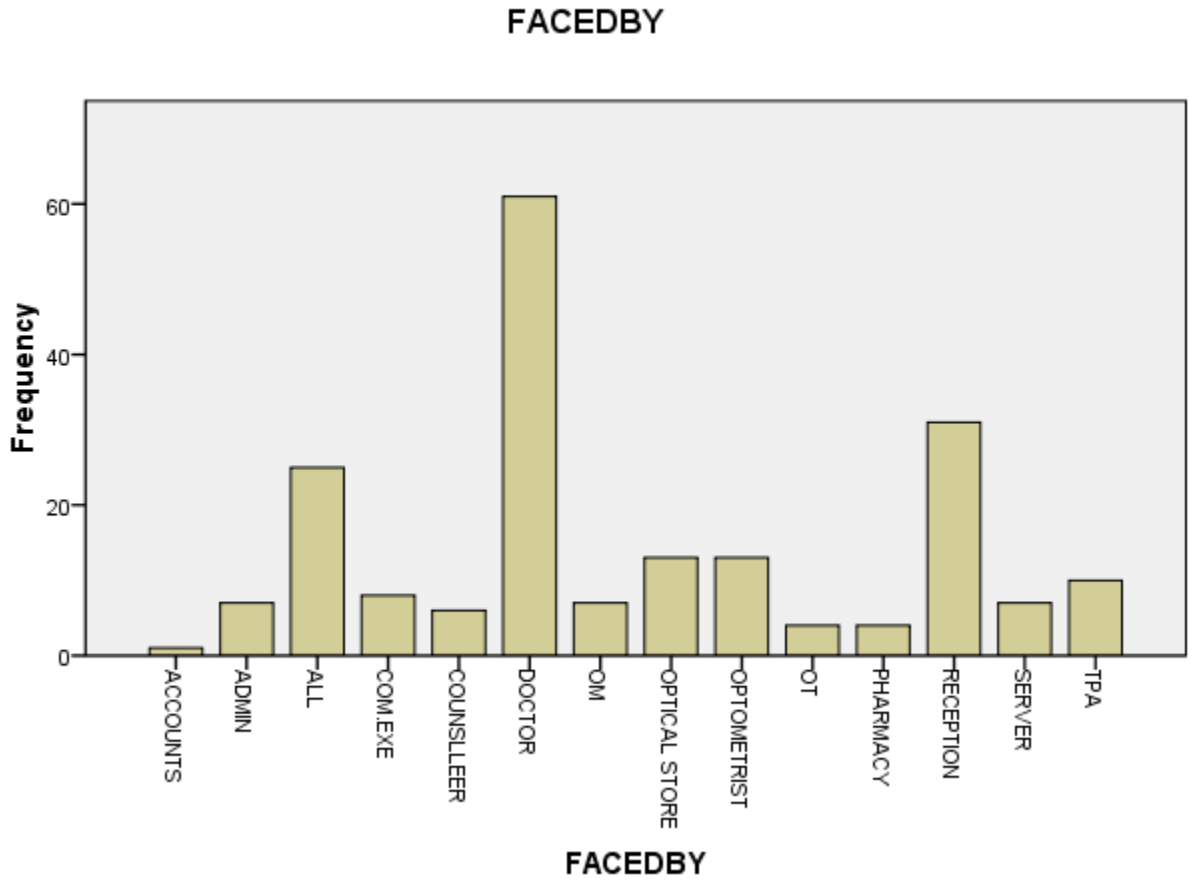
CONNECTIVITY ISSUES



PROBLEM FACED-CENTRE WISE

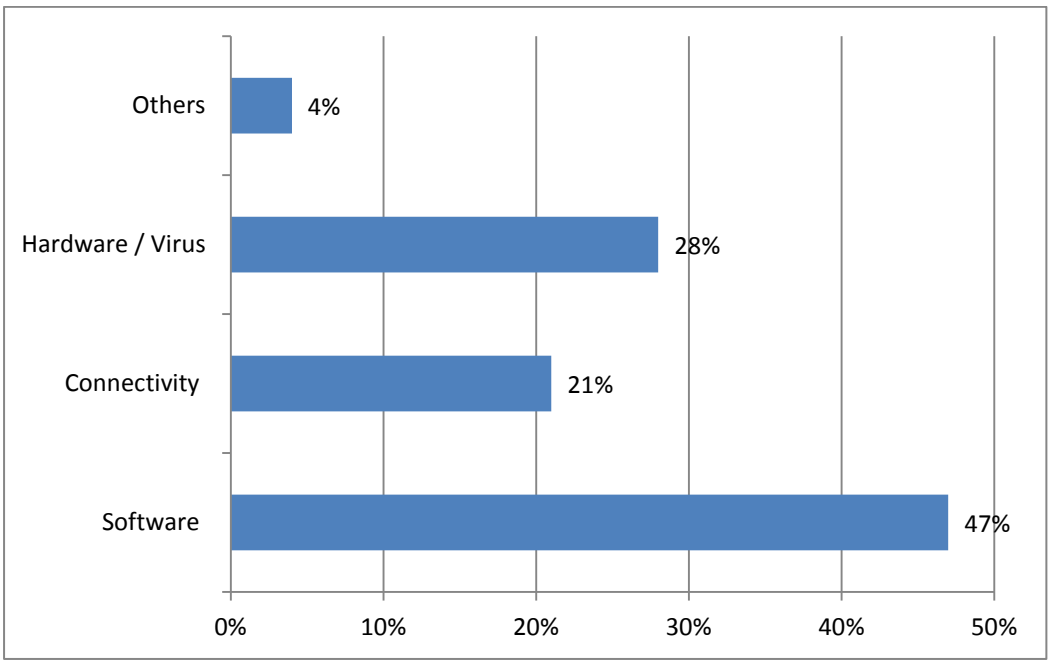


PROBLEMS-FACED BY

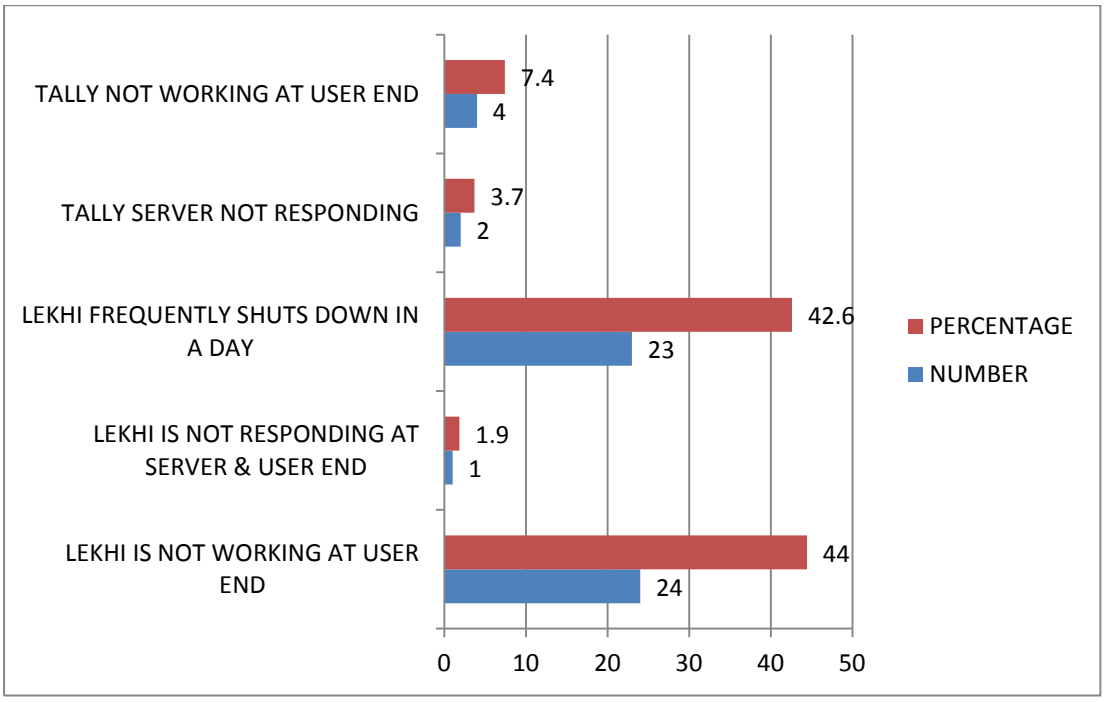


MONTH 2

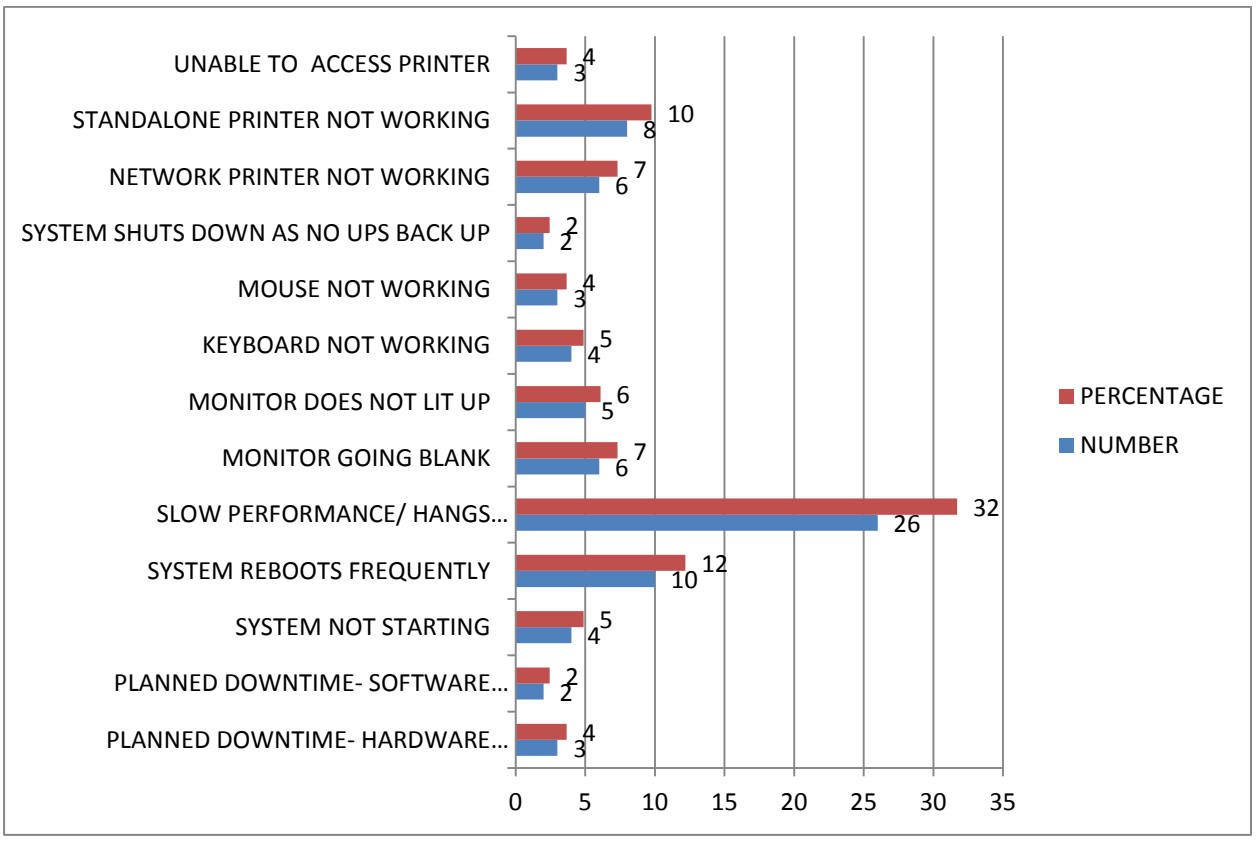
Problems faced



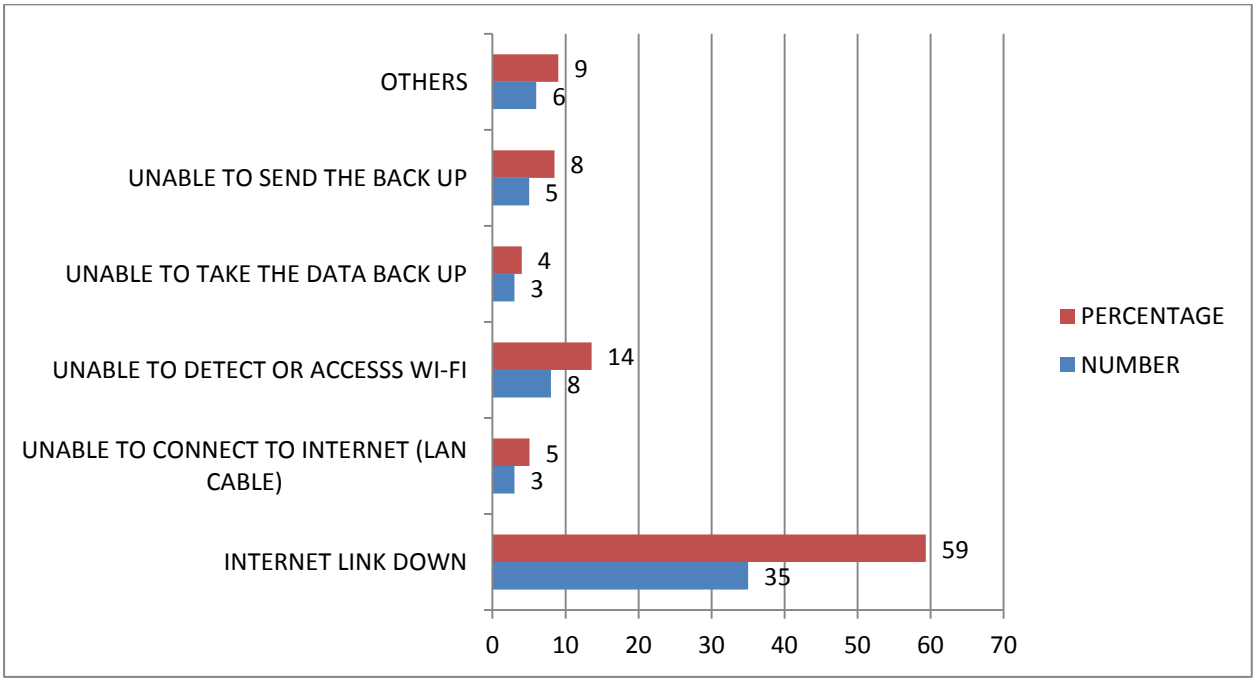
SOFTWARE ISSUES



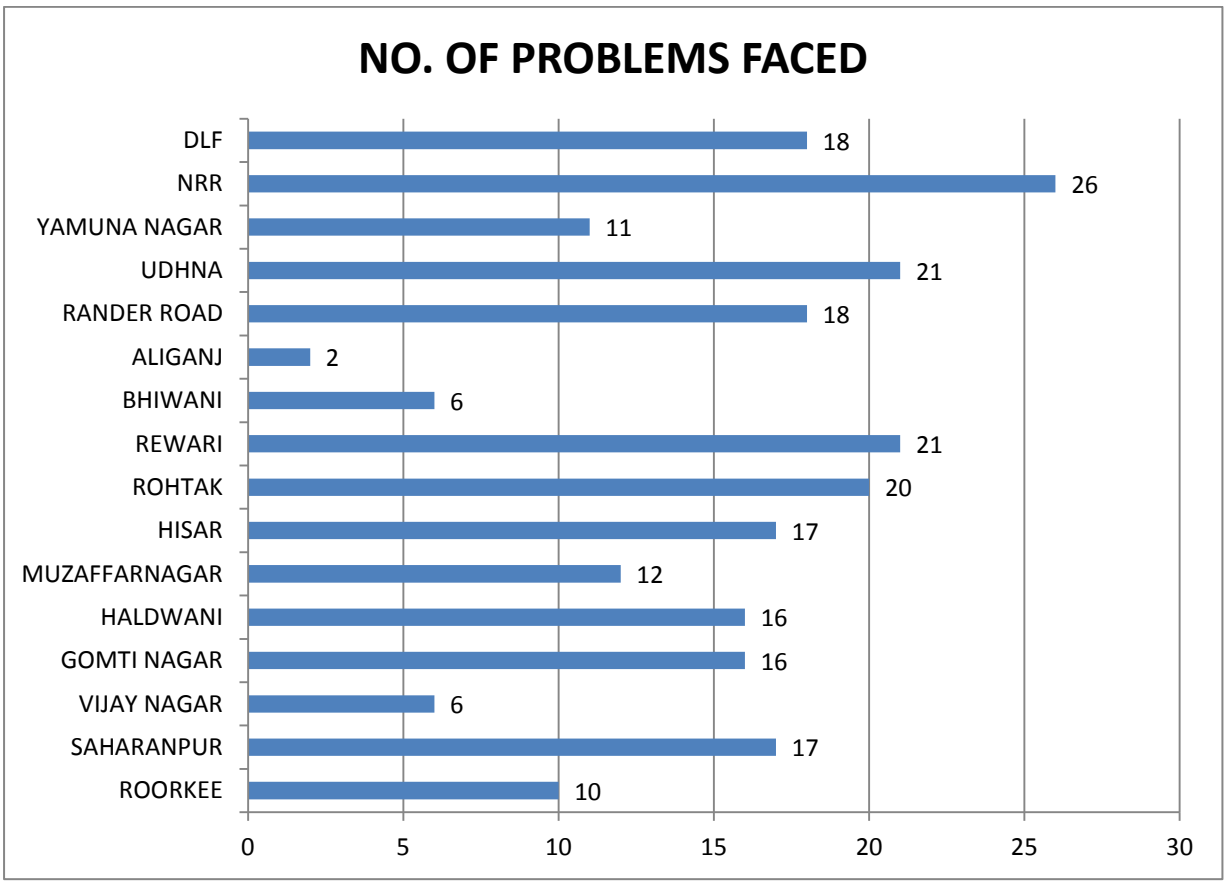
HARDWARE ISSUES



CONNECTIVITY ISSUES



PROBLEMS FACED-CENTRE WISE



Data from both the months depicts that:

1) The biggest issue is the software issue in all the centres
2) The software issues have increased in the second month
3) Almost all the centres are facing same problems
4) The most prevalent problems are software problems including: Lekhi not responding at user end, Lekhi server not responding, Lekhi frequently shuts down in a day
5) Other major problems include connectivity issues which include internet link down. Connectivity causes a lot of problems as Lekhi does not work without internet connectivity.
   So, software issues can be combined with the connectivity issues.

ANALYSIS

The analysis of this data suggests that:

Issues related to software and connectivity are major issues which needs to be resolved to get the process streamlined

Since, the gaps in the software are too much to be resolved and get the system working in a streamline manner

From, the gap analysis of the software and the results obtained from this data we conclude that:

Lekhisoft works well for small organizations where data maintenance takes place at a single place.

But in organization like Eye-Q, where the centres are located at far places, data maintenance is a crucial work.

The data from all the centres need to be collected and reports need to be maintained on daily basis.

But all this data maintenance is not been done with Lekhi.

Frequent breakdown

Another problem with Lekhi is the frequent breakdown.

Despite repeated reminders to Lekhi team and various efforts from the Lekhi team, these issues have not been solved as yet.

Frequent newer versions

Data Security

Since the data analysis suggests that most of the problems experienced are software related problems at almost all the centres, another study was done to check the behaviour, attitude and knowledge of the end users towards the software.

The aim of this study is to check the attitude of the end users towards the software and to determine the problems they are facing at the central level.

METHODOLOGY

Study area: Eye-Q Super speciality Eye Hospitals across all the centres

Study population: Doctors / consultants, PRE, Commercials, Opticians, Pharmacists, Optometrists

Sampling and sampling design: This study was conducted at all 18(running) centres of Eye-Q super speciality eye Hospitals. Employees from various departments, who use Lekhi, were selected as study participants. Originally, the study included 150 people, out of which 129 people responded.

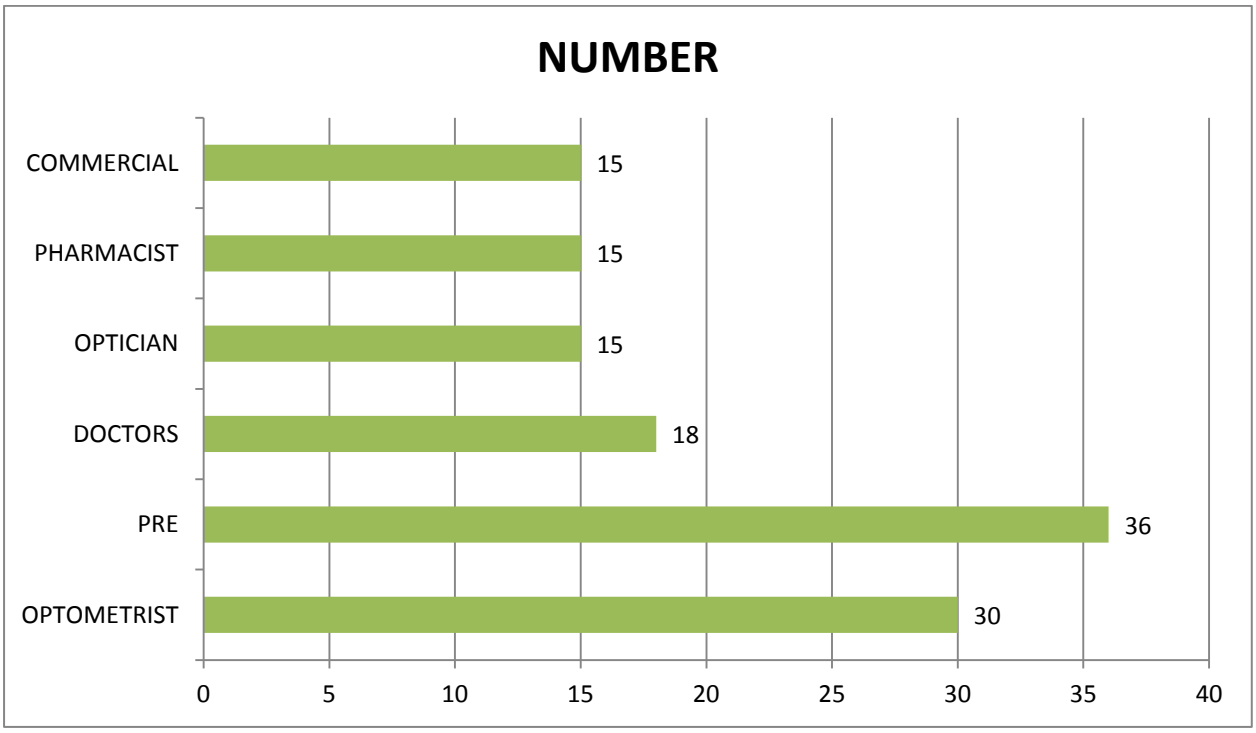
Data Collection Tools and Techniques:

A questionnaire was developed which consisted of various questions as per the objectives of the study. A likert scale was used to assess the knowledge and behavior of the employees related to Lekhi and the user friendliness of the same. The questionnaire consisted of all close-ended questions.

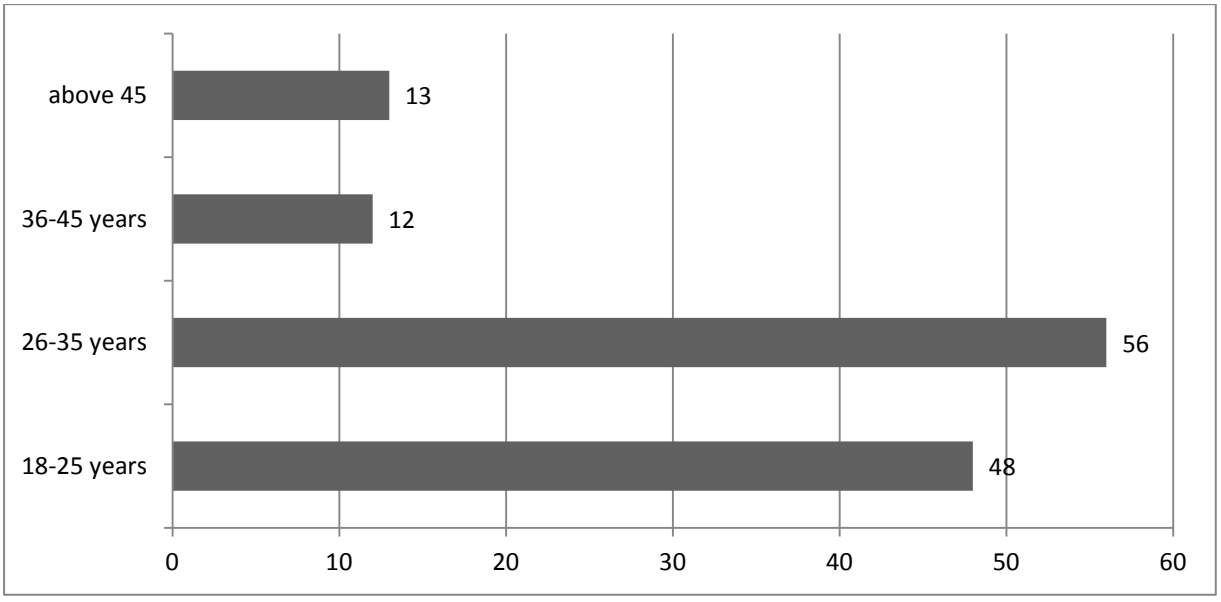
Participants were explained in detail regarding the purpose of the study; informed consent was obtained and questionnaires were distributed. Necessary steps were taken to maintain anonymity.

Information thus obtained from the above questionnaire was entered in SPSS software and analyzed.

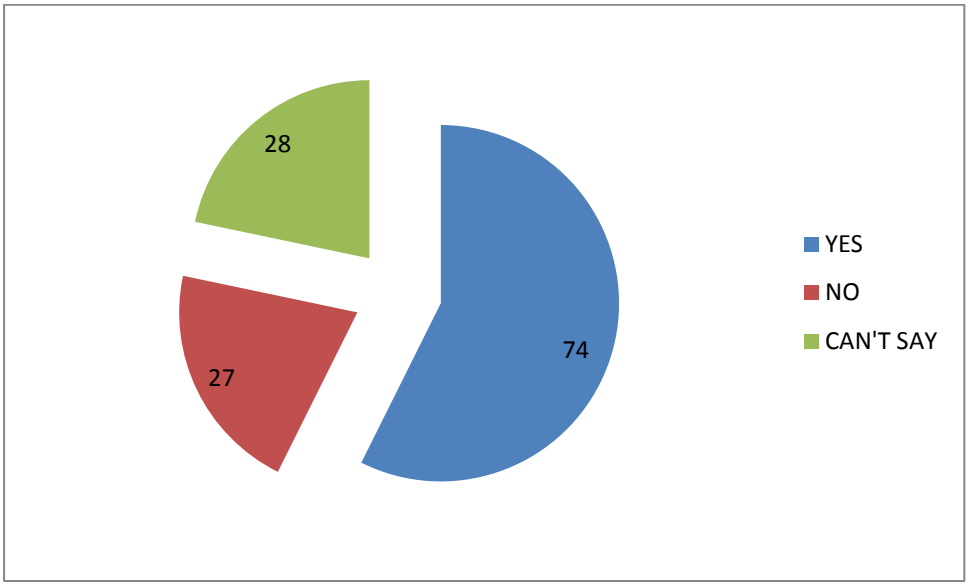
STUDY PARTICIPANTS



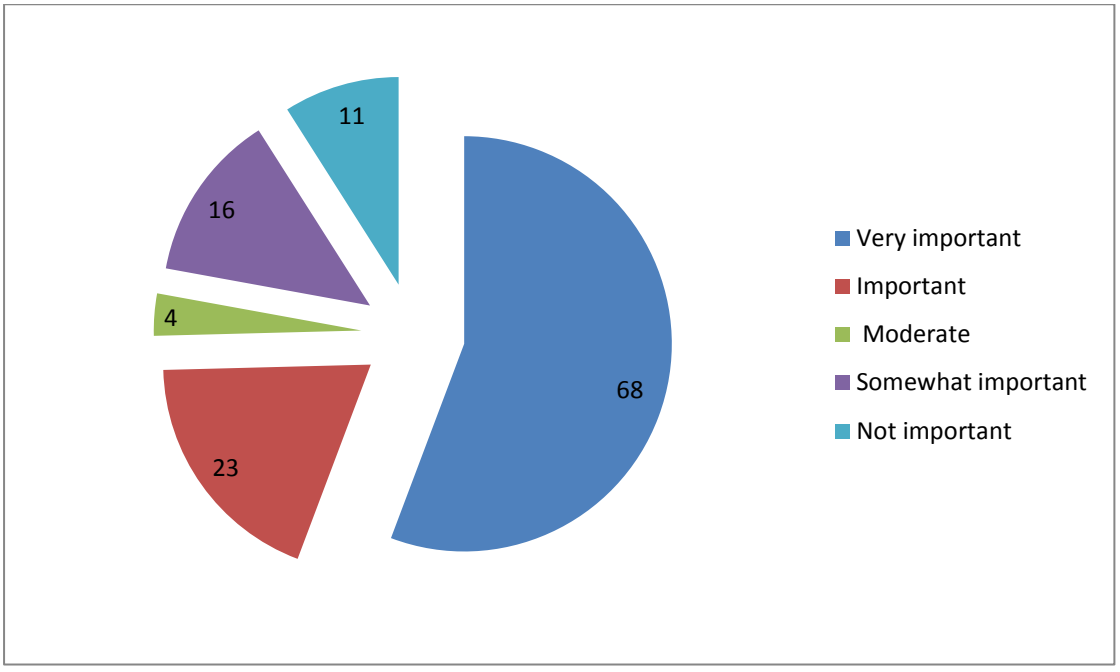
AGE GROUP



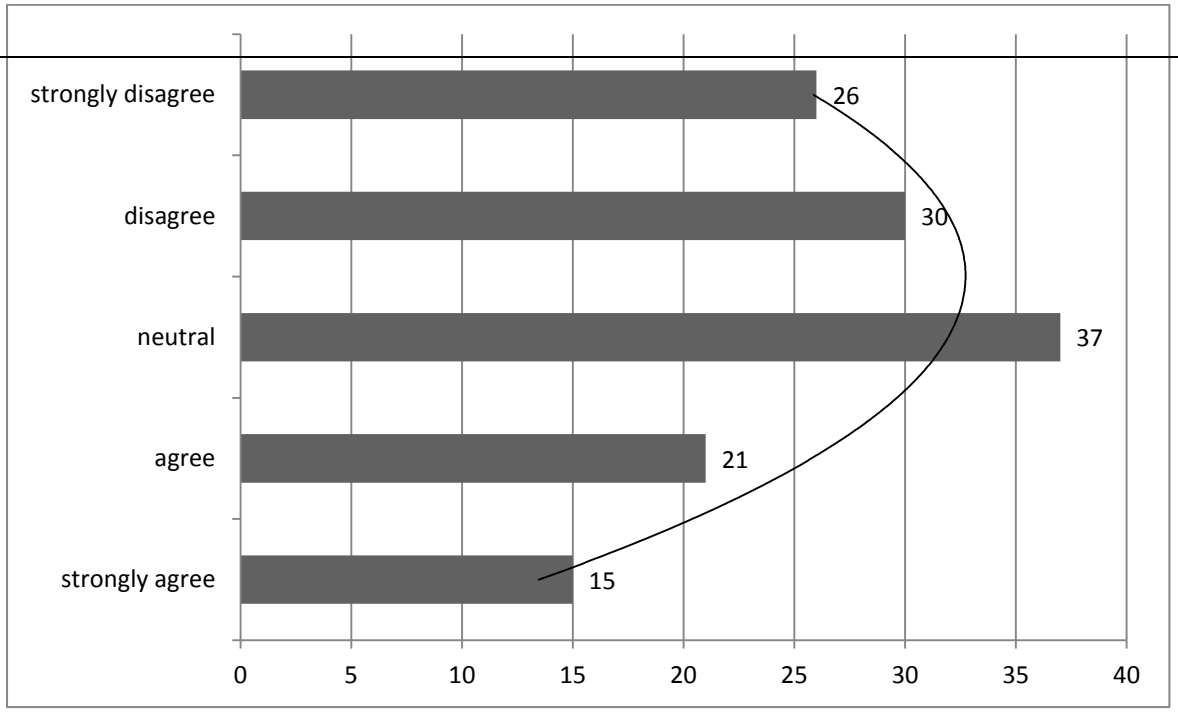
Has LEKHI reduced the need for manual documentation?



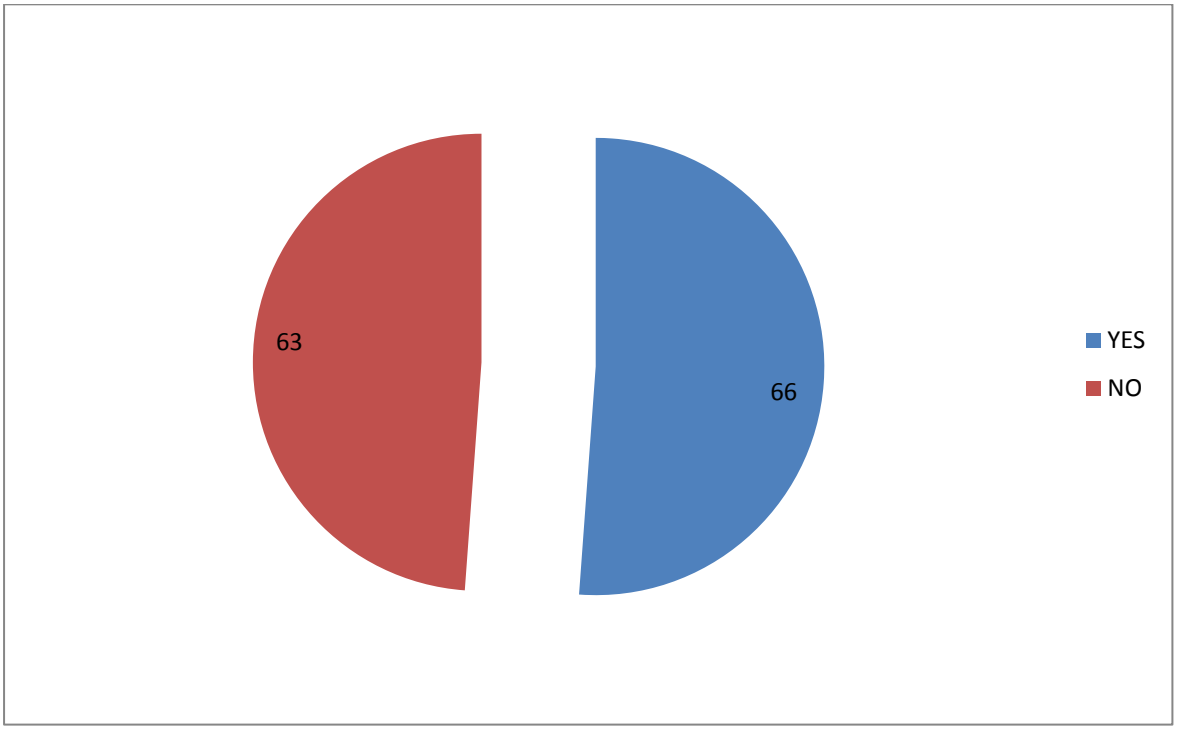
Importance of Lekhisoft in carrying out Hospital Functions



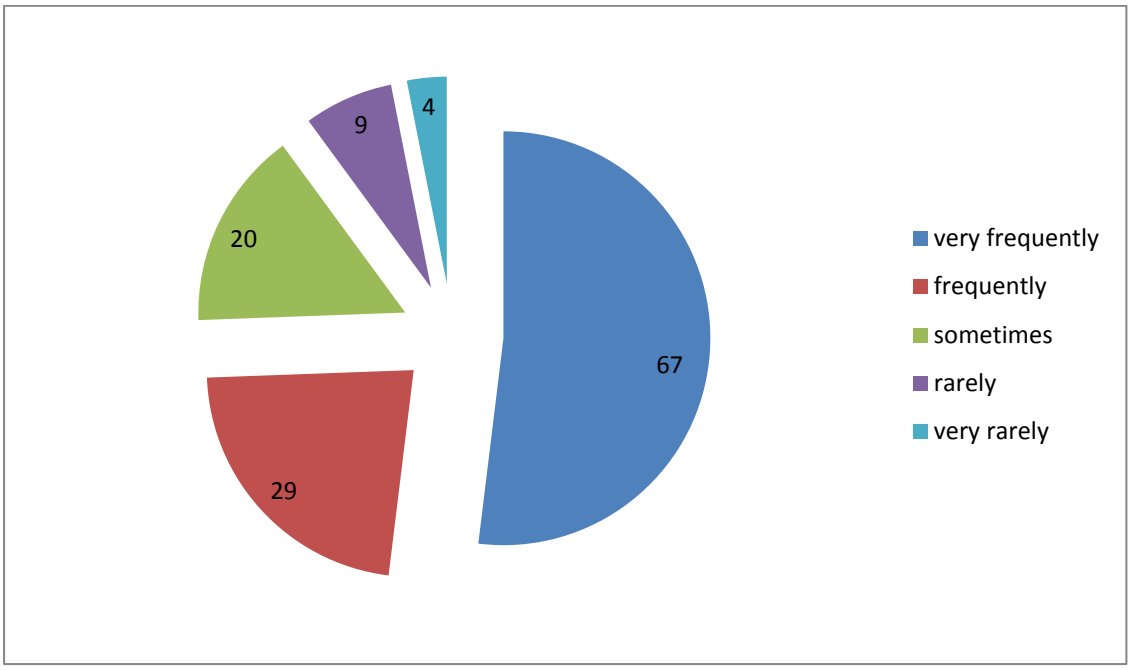
SECURITY OF THE DATA STORED



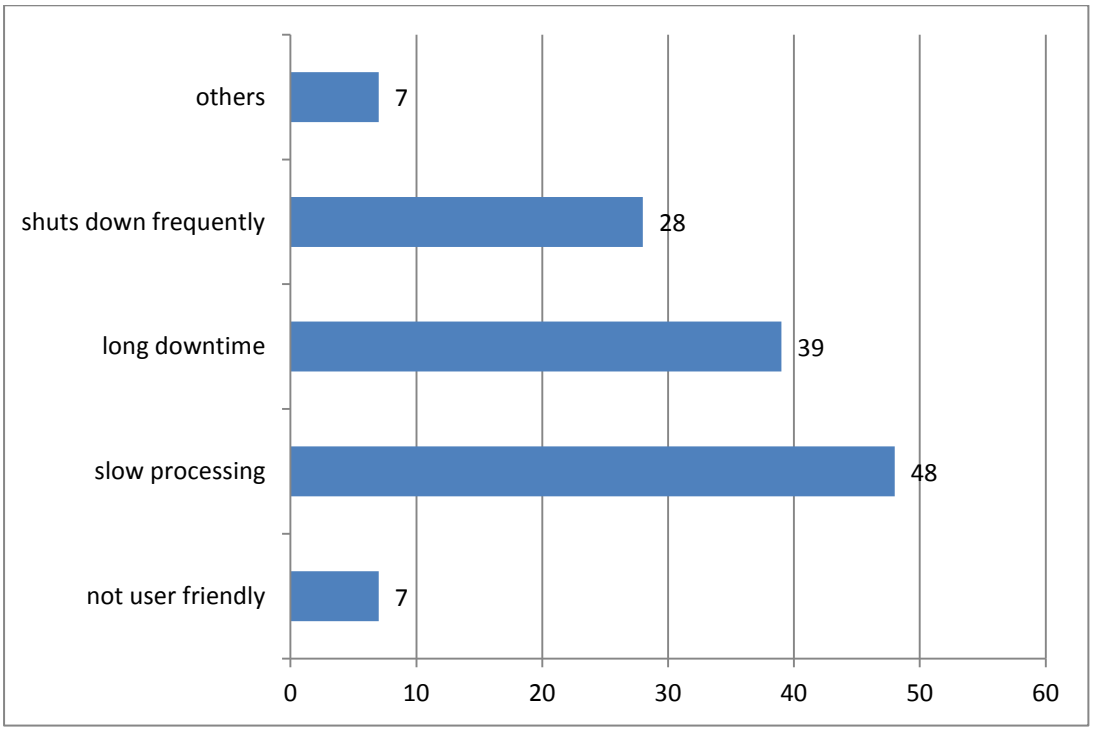
Received Training for using Lekhi?



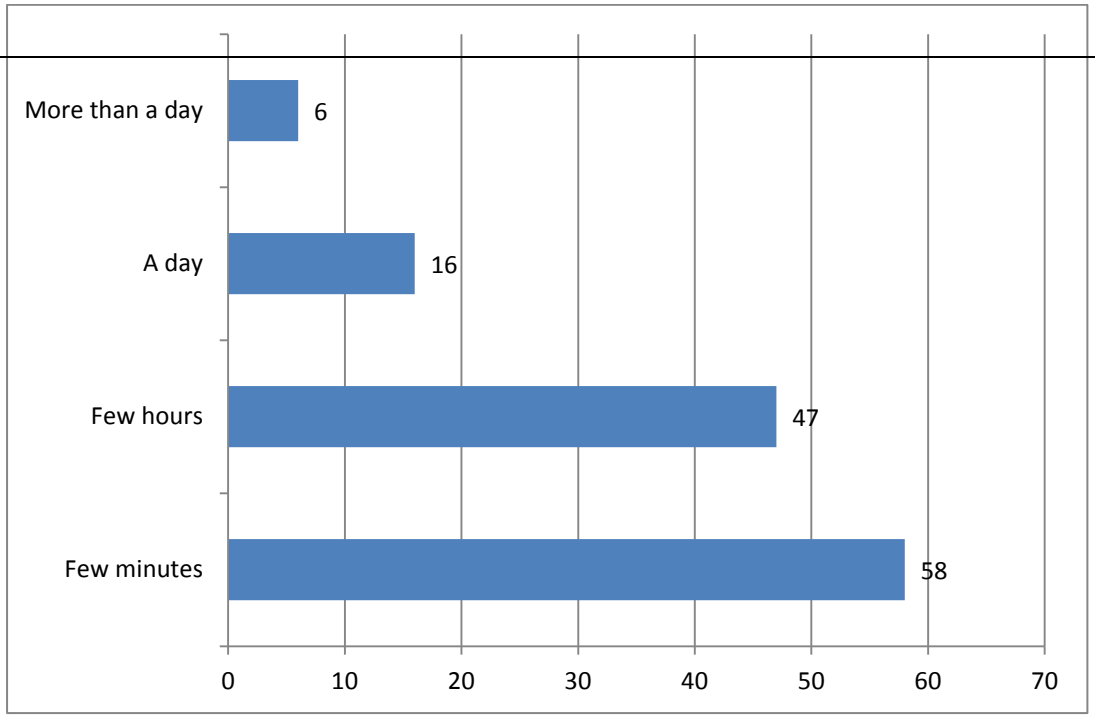
Frequency of experiencing problems



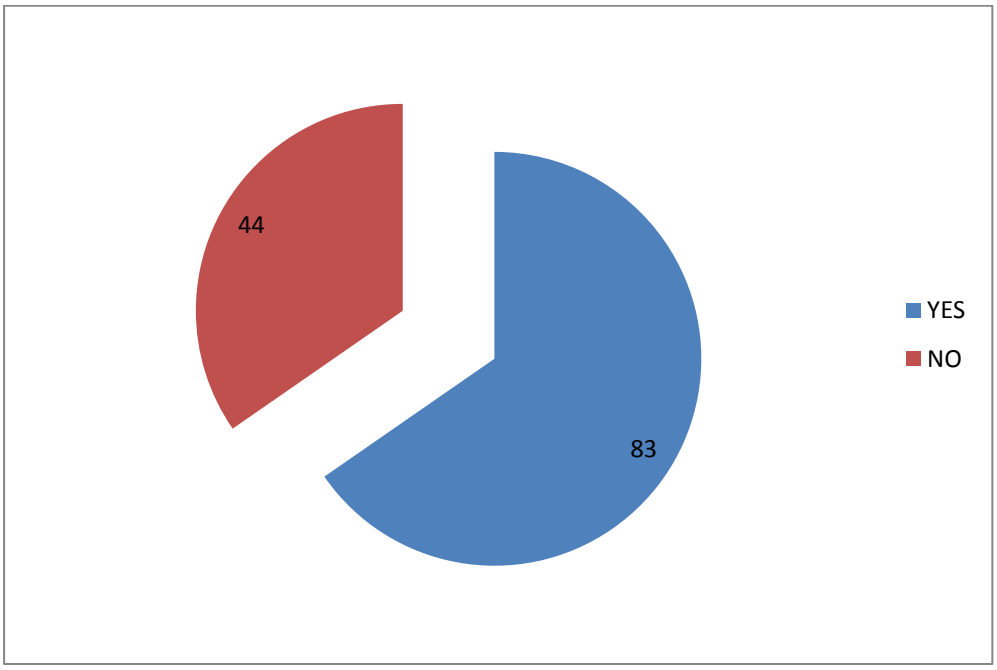
Most frequently experienced problems?



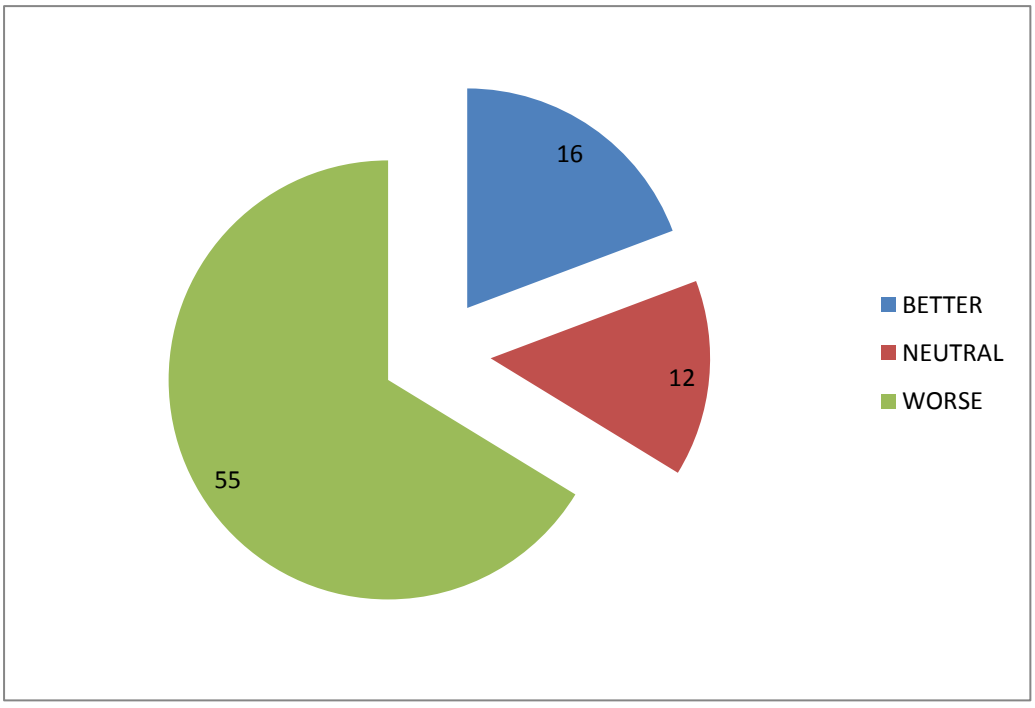
How much downtime does the system experience usually?


More than a day
6
A day
16
Few hours
47
Few minutes
58
0
10
20
30
40
50
60
70

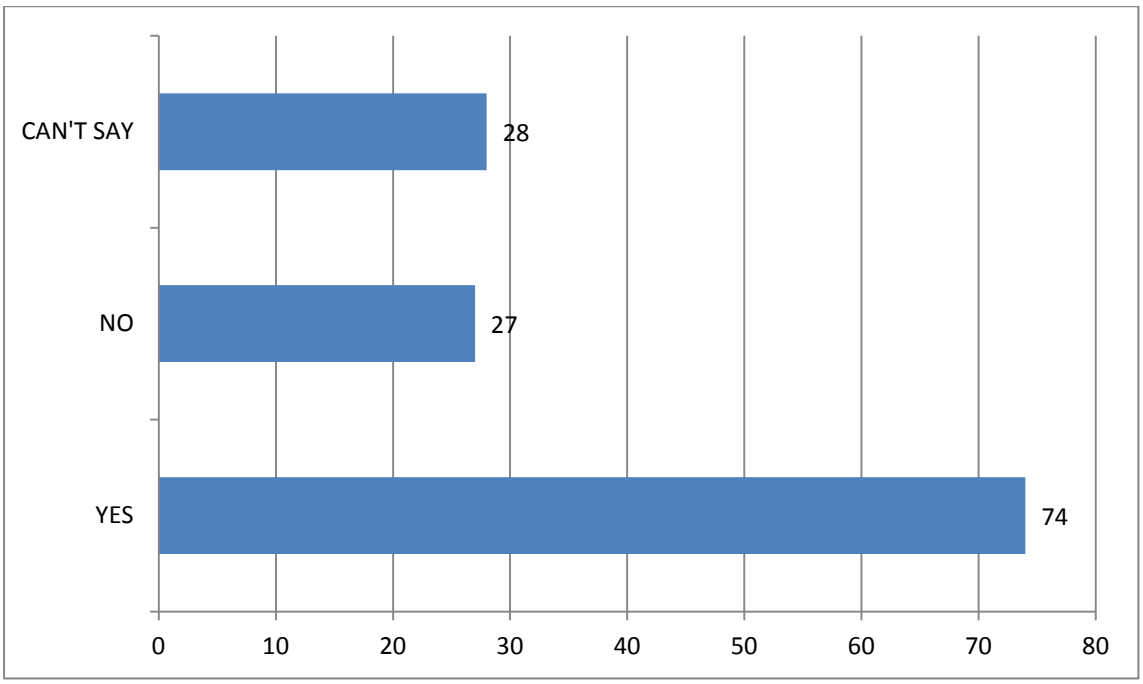
WORKED ON OTHER SOFTWARES?



COMPARISON OF Lekhi to other HIS



DO YOU THINK LEKHI SHOULD BE REPLACED BY NEW SOFTWARE?



LIMITATIONS OF LEKHI

Gaps from the user side

1) Run time error
2) Lekhi stops working instantly
3) There is no option of merging and demerging the patient's records once created
4) There is no episode number which is created, which will help identify the visit number of the patient etc.
    a. OPD patients can be given numbers starting from OPD and IPD patients can be given numbers starting from IPD
    b. Episode date and time can be mentioned with the details while creating the episode for a particular patient
    c. VIP Category? If necessary
5) There has to be a record of the number and type of procedures done by a particular optometrist
6) There is no record of the amount of cash which is received at a particular centre on behalf of a particular centre
7) There is no record kept where it can be saved and sent for usage at other times
8) The appointments cannot be given in slots. The system does not accept time two hours before the appointment has to be made.
9) And the system does not show how many appointment slots are available or have been distributed in a certain time limit. The list of available slots has to be seen manually.

LIMITATIONS FROM OPTOMETRIST'S END

1) A Scan reports should be attached to the software.
2) Test results reporting format has not been defined
3) The test details of the patient are not being maintained in the system
4) Systemic disease history and eye history should be in different fields.
5) Reporting formats not defined for tests like- Scotopic, Photopic, Amsler Grid Test, Spacular microscopy

LIMITATIONS FROM OPTHALMOLOGIST'S END

1) Direct orders cannot be given to pharmacy from the doctor.
2) Test orders also cannot be given directly from the HIS
3) No user authentication at the end ,so as to know who entered the data or who entered the details
4) A whole menu where you can see all the details of the patient which include all the orders, tests done and test results as well
5) The return time of the patient is not recorded
6) Financial and final discharge of the patient cannot be done separately

LIMITATIONS FROM MANAGEMENT'S END

1) Surgical details cannot be extracted. E.g. - which lens was used in what surgery etc?
2) The details e.g.- What all packages were been sold to the patients in a particular month cannot be extracted
3) Reports like: how many persons were advised a particular procedure
   - How many patients got the tests done, if advised so?
   - How many patients came back for follow up with the same doctor?
   - Surgeries advised to people between 18-32 years and above 32 years etc.
   - Whole data of the disease cannot be viewed e.g. – No. of patients with NCT reading >20 etc.
4) The data is not available centrally. E.g. till the data from a particular centre is not received and restored in the data base, the reports cannot be extracted

LIMITATIONS FROM COMMERCIAL'S END

- Reports have to be prepared manually
- DPR is being prepared manually
- Difference in the revenue sheet as seen on Lekhi and the actual values
- not possible to find old Pos as the versions keep changing

LIMITATIONS FROM OPTICIAN'S END

- System shuts down frequently while preparing Purchase Orders
- Frequent problems in entering discounts

DISCUSSION

The data from both the studies suggests that,

- Most of the problems experienced are software problems or the connectivity issues which lead to software problems ultimately
- Users at almost all the centers are not satisfied working on Lekhi
    1) 27 of 129 people have said that Lekhi has not reduced the need for manual documentation.
    2) Of 129, 68 people think Lekhi is very important for carrying out daily activities,23 people think it is important , 16 people say it is somewhat important and 11 people think it is not important.
    3) 56 people disagree to the fact that data stored in the software is secure and 37 people are neutral
    4) Of 129, 66 people say that they have received training for Lekhi while 63 people say, they have not received training for Lekhi
    5) 67 people experience problems very frequently,29 persons experience problems frequently while only 13 people say that they experience problems rarely
    6) 39 people say the most frequently occurring problem is long downtime, 48 people say its slow processing while 28 people say that the system shuts down frequently
    7) 58 people say that the downtime is few minutes, 47 people say that the downtime is few hours while 16 people say that the downtime is around a day and 6 people say that the downtime is more than a day
    8) Of 129, 83 people say that they have used other Hospital Information Systems while 44 have not used any other information system
    9) 55 people think that Lekhi is worse than the system they have used before, 16 people think it is better and 12 people are neutral.
    10) 74 people have said that Lekhi should be replaced by other software while 27 people have said it should not be replaced.

- All these have not been solved by the Lekhisoft team despite repeated efforts
- Other problems with Lekhisoft included **security issues**. The data is not secured in the system. The data base has not been secured. Anyone who has access to the server can change the data
- Major issue is **inaccessibility to the data.** The management need to have daily access to the data to prepare daily progress reports. But since the data from a centre is received manually and that is been uploaded into the system on the next day. Since the centres have been located at distant places, the process of receiving data manually from all the centres become very inefficient which needs to be corrected
- Another important issue was **frequent breakdowns.** Since the Lekhi team has not been able to resolve all these problems, correct decision need to be made
- The supply chain part or the inventory part of the software is filled with gaps.
- System doesn't respond most of the times while preparing sale orders and purchase orders.
- The past data is inaccessible from Lekhisoft.

- IPD cannot be managed in Lekhi. Since an integrated HIS contains data from all the modules, and IPD module is entirely missing from Lekhi. so, a software containing data from all the modules is necessary to streamline the workflow of the organization.
- The Previous billing details of the patients are not accessible from the software.

So, in such condition appropriate decision need to be made to get the process streamlines. Right now there are 20 operation centers in various parts of the country. And the company is aiming to have 50 centres by the end of next year.

So, having streamlined processes is very essential for the management to do proper planning and for people at operational level to get a right idea of what they are doing.

Since, Lekhisoft is not able to provide Eye-Q with all the requirements a decision should be made to change the software and do the necessary amendments and alterations needs to be done in the process and since the software issues can be dependent upon the connectivity , necessary steps need to be taken to get the workflow streamlined.

CONCLUSION/RECOMMENDATIONS

Results from both the studies indicate that the major problems happening at Eye-Q super speciality eye hospitals is associated with Software and Connectivity.

So, the following decisions have been made:

1) Buying Lease lines offering 99.5% uptime. Since almost all the centres have broadband connections which are very unreliable. So, Eye-Q has decided to shift to Lease lines keeping broadband connections as the backup.
2) Shifting to a cloud based solution. Since data management is a crucial thing to keep the workflow streamline and for the top management to make business decisions, cloud based solution is necessary.
3) To maintain data security, a fool proof system is required which offers complete security of the patient information.

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