INTERNSHIP REPORT

HOSPITAL PROFILE

National Heart Institute, established in 1981, is a land mark in the health care delivery in India. It was the first heart institute to be launched in India and the first private sector cardiac catheterisation laboratory to be established in the **'Southern Hemisphere'**. Towards the goal of transplanting health and happiness, National Heart Institute is staffed by a team of dedicated and value driven medical professionals, whose endeavor is to provide the ultimate in contemporary medical care for we believe in 'Together we care ... as no one has ever done before'. The National Heart Institute is the Research & Referral tertiary care Heart Hospital of the All India Heart Foundation, which acts as a nucleus for diagnosis and treatment of heart ailments and allied diseases and is equipped with state of the art equipments. Surgical services include all kinds of closed and open Heart Surgeries like Coronary Artery Bypass Surgery, off pump bypass surgery (beating heart surgery), valve repair & replacement surgeries, aortic / carotid surgeries, congenital heart surgeries including blue babies and minimally invasive (Key hole) surgeries. It has modern Cath lab facilities where procedures like Angiographies, Angioplasties, Stenting of the Coronary arteries, valvotomies correction of birth heart defects and closure of holes of the heart, Electrophysiological studies, Radio Frequency ablation, Rotablation, Intra-vascular ultrasound, pacemaker and internal defibrillator implantation are carried out. Highly qualified staff, trained in India & abroad, with extensive experience in Cardiology & Cardiac Surgery service these areas.

Apart from indoor treatment, the Institute also provides comprehensive medical check-up, i.e. Executive health check-ups, at nominal rates with a view to ensuring good physical conditioning and health of all individuals. Cardiac patients with other ailments are also admitted to this hospital, as specialists for diseases other than heart are available round the clock for consultation and treatment.

The Institute has been recognised for open heart surgeries, coronary artery bypass surgery, angiography and angioplasties and other specialised cardiac treatment by the Central Govt. Health Scheme (CGHS), Employees State Insurance (ESI), and Employee Contributory Health Scheme (ECHS), besides the Governments of Himachal Pradesh, Haryana, Madhya Pradesh, Mizoram and Govt of NCT of Delhi. Ministry of Defence, Office of the Director General of Armed Forces Medical Services and Directorate General of Medical Services Naval Headquarters has recognised NHI for treatment of their employees and their families. 122 Public sector bodies, almost all the TPAs and International Organisations like World Health Organisation & UNICEF are also empanelled with the National Heart Institute.

Keeping in tune with its ethos of service to the humanity, National Heart Institute carries out regular Community outreach programmes (heart camps) and also ‘Executive Health Checks’ and ‘Recruitment Checks’ to detect cardiac problems early and take remedial action.

National Heart Institute is recognized by National Boards for post doctoral training and runs an active teaching and training programme in the specialities of Cardiology & Cardiovascular & Thoracic Surgery. It also carries out research in all facets of Cardiology & Cardiac Surgery.

National Heart Institute is recognized as a Collaborative Centre of WHO in Preventive Cardiology since 1983. It is an affiliate of the World Hypertension League and Heart Beat International.

National Heart Institute lays special emphasis on "Lifestyle Disorders" and caters to outdoor consultation, education and counselling on Diabetes, obesity, cholesterol related diseases, thyroid disorders, alcohol and smoking. Indoor care for Diabetes & Lifestyle disorders are taken care of.

The hospital has a department of Pulmonology and Sleep Medicine which is equipped with sophisticated machines and is manned by dedicated Pulmonologists, Thoracic Surgeons and Physiotherapists.

10% indoor beds are earmarked for poor patients having monthly income of Rs.4000/- and below and the hospital regularly provides free treatment to such patients and lots many at subsidized rates. The hospital also runs free OPDs for two hours on all working days.

In collaboration with Heartbeat International, the hospital provides free Cardiac Pacemakers for needy patients.

Services

- Cardiac Emergencies
- Ambulance Services
- ICCU
- Health & Cardiac Check
- Philanthropic Work
- Transfusion Medicine
- Laboratory Services
- Physiotherapy Prog. &
- Cardiac Rehabilitation
- Dental Services

CENTERS OF EXCELLENCE

CARDIOLOGY

The Department provides intensive cardiac care, diagnosis & treatment of cardiac ailments. It has latest technologies for cardiac catheterization and angiography, Angioplasty, Valvuloplasty, Pacemaker and Defibrillator implantation, 3 D Echo, Holter, Stress Testing, Electrophysiological Studies, etc. The hospital's warm ambience

dedicated & well qualified doctors, cheerful & pleasing support staff, modern outpatient facility and dedicated inpatient care ensures that the patient is in the best hands at National Heart Institute.

Interventional Cardiology

Interventional cardiology is a branch of the medical speciality of cardiology that deals specifically with the catheter based treatment of structural heart diseases.

A large number of procedures can be performed on the heart by catheterization. This most commonly involves the insertion of a sheath into the femoral artery (in practice, any large peripheral artery or vein) and cannulating the heart under X-ray visualization (fluoroscopy, a real-time x-ray).

Procedures Performed by Specialists in Interventional Cardiology

- Angioplasty (PTCA, Percutaneous Transluminal Coronary Angioplasty) - for coronary atherosclerosis
- Valvuloplasty - dilation of narrowed cardiac valves (usually mitral, aortic or pulmonary)
- Procedures for congenital heart disease - insertion of occluders for ventricular or atrial septal defects, occlusion of patent ductus arteriosus, angioplasty of great vessels etc.
- Emergency angioplasty and stenting of occluded coronary vessels in the setting of acute heart attacks (Primary PTCA)
- Coronary Thrombectomy - a procedure performed to remove thrombus (blood clot) from blood vessels.
- Carotid angioplasty
- Insertion of temporary and permanent pacemaker including dual chamber pacing
- Insertion of AICD (Internal Defibrillator)
- Radio frequency ablation for irregular rhythms of the heart.

Invasive procedures of the heart to treat arrhythmias are performed by specialists in clinical cardiac electrophysiology.

Non- Invasive Cardiology

- 3 D Echocardiography & Doppler Studies
- Foetal Echocardiography
- Transoesophageal Echocardiography
- Peripheral and Carotid Doppler Studies
- Stress Echocardiography
- 24 Hour Holter Monitoringg
- Treadmill Stress Test
- Ambulatory Blood Pressure Monitoring
- Nuclear Cardiology (in Collaboration)
- Cardiac CT & MRI (In Collaboration)

NHI LOGO

NHI VISION

"To create long term relationships by caring as no one has done ever before"

NHI MISSION

"To provide superior, compassionate and innovative cardiac care to prevent and treat disease maintaining highest standards in safety and quality"

DEPARTMENTAL OVERVIEW

OPD

Definition: Outpatient department, as the literature defines, is a part of the hospital with allotted physical facilities, medical & other staff in sufficient numbers, with regularly scheduled hours, to provide care for the patients who are not registered as in-patients.[2]

An outpatient department is:

A hospital facility where non-urgent ambulatory medical care is provided, according to the National Hospital Ambulatory Medical Care Survey (NHAMCS).

A facility where the outpatient visits for receipt of medical, dental, or other services at a hospital and these patients are not lodged in the hospital. Each appearance by an outpatient to each unit of the hospital is counted individually as an outpatient visit, including all clinic visits, referred visits, observation services, outpatient surgeries, and emergency department visits.

OPD DEPARTMENT OF National Heart Institute (NHI)

Timings: 8:00 am to 8:00 pm

- The OPD department of the hospital is located as a separate complex around the hospital.

- Since, National Heart Institute is a cardiac super-specialty hospital; its OPD department mainly provides cardiac consultations, cardiac comprehensive packages and also, employee health check-up packages. These packages include a variety of diagnostic services such as electrocardiography (ECG),

echocardiography (ECHO), chest x-ray, treadmill test (TMT), ultrasound and blood tests.

- All the patients' coming for comprehensive cardiac packages gives blood samples, urine samples, undergoes chest X-ray and ECG examination. Then, the patient goes for cardiac consultations and on doctor's advice, may also undergo ECHO, TMT and ultrasound examinations.

- Signage is available at various places inside and outside the OPD directing the patients.

- Various investigation facilities are available close to each other reducing the distance and motion time.

- Adequate waiting hall is available in the main lobby with LCDs at place, connected with public utilities.

- Cafeteria is available in the area of OPD.

The importance of the department lies in the following:

- It contributes towards reducing the morbidity and mortality, and therefore, provides a stepping stone to health promotion and disease prevention, also.

- By providing primary as well as comprehensive healthcare, an OPD can reduce the number of admissions for inpatient care. The cost of treatment in OPD being less than for inpatient services, cost-effectiveness and efficiency is ensured.

An OPD enables a hospital to deliver the following functions:

- Control disease by early diagnosis and timely treatment.

- Provide effective treatment on ambulatory basis.

- Provide follow-up care to discharged patients and their rehabilitation.

- Provide a facility for training of medical, paramedical and nursing staff.

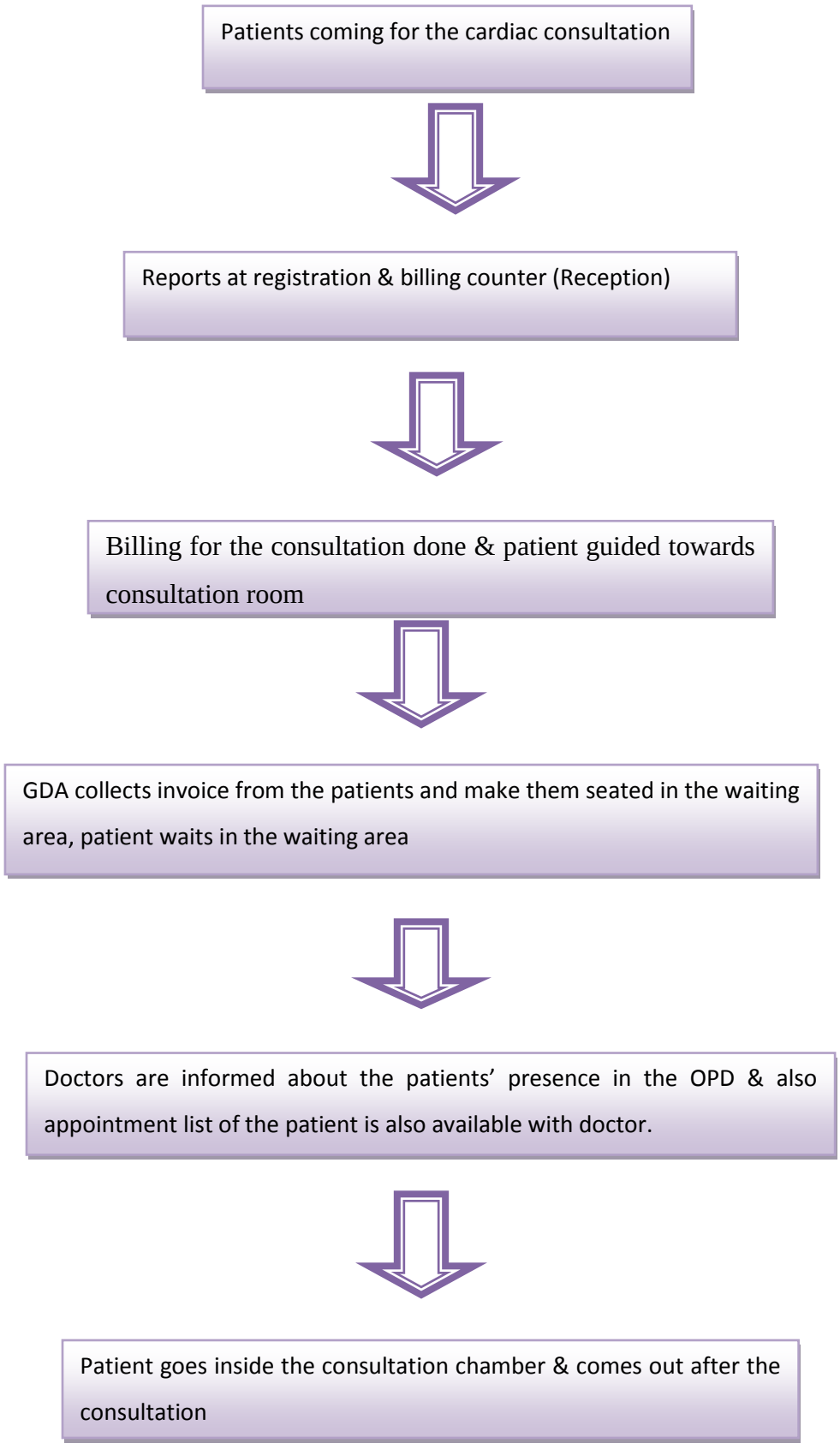
ROLE OF THE OPD at NHI

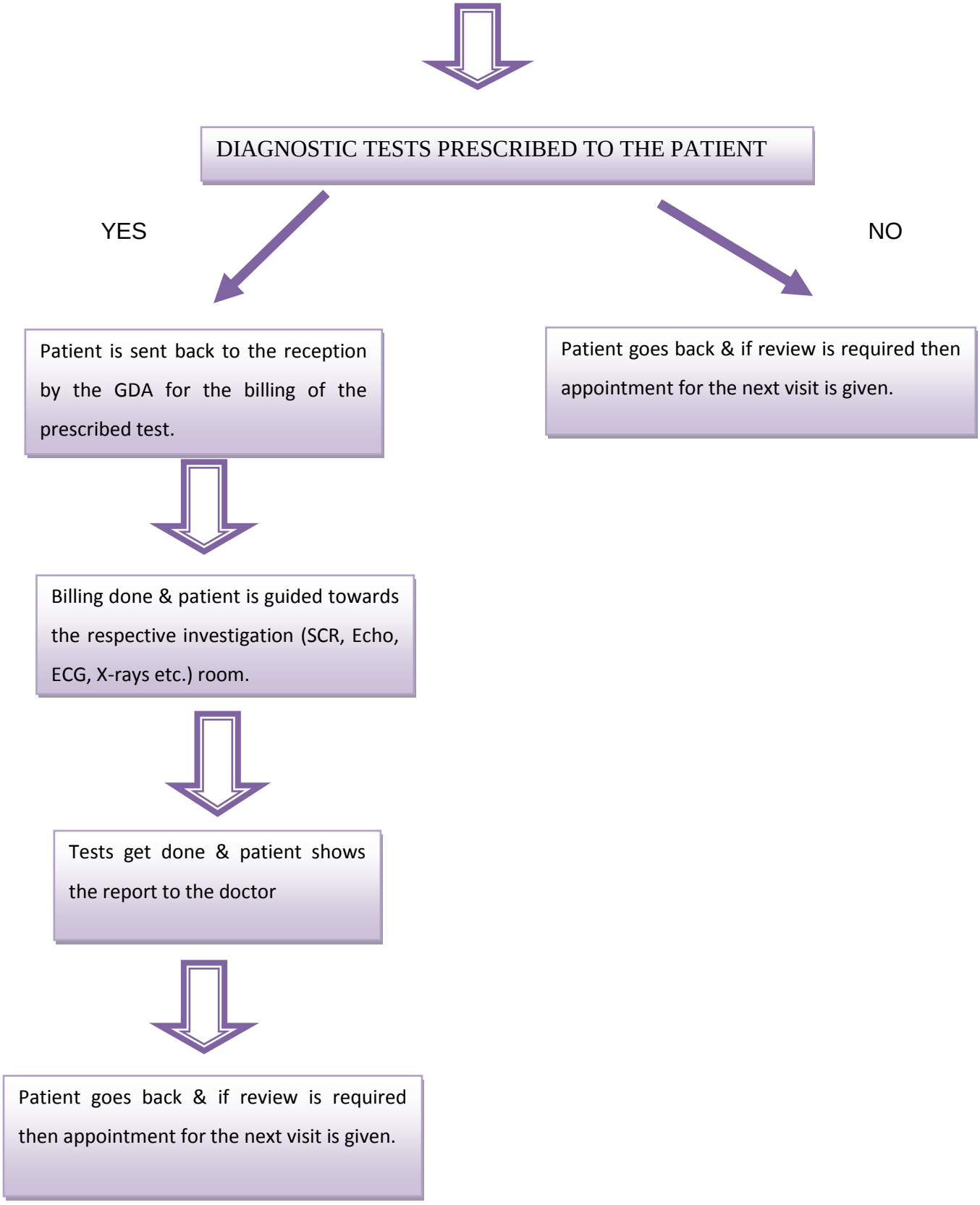
- Providing proper guidelines
- Responsible for coordination with patients for Registration, billing till the report is delivered.
- Giving Doctor's Appointment
- Collecting fees/Cash
- Attending phone calls
- Register Maintenance
- Formulating Rosters
- Dispatching Diagnostics reports
- Making Admission Files
- Providing Visitors pass
- Providing General information & handling queries of patients/ visitors/ staff either on phone or via personal contact.
- Customer Feedback
- Maintaining information regarding the services of the hospitals, hospital telephone directory, price list of services and utilities like railways, taxi, police, fire, ambulance etc.
- Arrangements of various services like general attendant/ female attendant in OPD, transport services like wheelchair/ stretcher for the patients.
- Sending the incident/complaint to the concerned department.
- Responsible for incoming &outgoing call / announcements.

TABLE 1: Staff pattern in the various departments of OPD

Department	No.	Consultant(s)	Technician(s)	GDA(s)
Sample Collection Room	1	-	1	0
ECG Room	1	-	1	0
X-Ray Room & Ultrasound Room	1	1	2	1
ECHO & TMT Room	1	1	2	1
PFT, HOLTER & ABP	1	0	1	0
Consultation Room	7	6	0	2

Fig: 1 OPD WORKFLOW IN National Heart Institute (NHI):




DIAGNOSTIC TESTS PRESCRIBED TO THE PATIENT
YES
NO
Patient is sent back to the reception by the GDA for the billing of the prescribed test.
Billing done & patient is guided towards the respective investigation (SCR, Echo, ECG, X-rays etc.) room.
Tests get done & patient shows the report to the doctor
Patient goes back & if review is required then appointment for the next visit is given.
Patient goes back & if review is required then appointment for the next visit is given.

TASKS PERFORMED:

- To ensure OP services is rendered, quickly (without unreasonable waiting) with warmth and perceived touch. The patient and attendants are quickly interacted and service is promptly delivered in value added manner resulting in to repeat visit.
- To ensure prompt interaction with the patients & attendants at front office / main reception as regards to delivery of hospital services (OP and IP).
- To maintain a check on front office and OPD staff as regards to proper service delivery.
- To monitor and strengthen prompt receipt and conveying of patient requiring emergency services.
- To work as interface of the front office/ main reception in terms of patient management, service delivery and patient satisfaction.
- To work towards growth of outpatient revenue by convenient and value added delivery of diagnostic services of the hospital- lab tests, imaging to the out patients.
- To maintain pertinent details relating to sub optimal service delivery and patient dissatisfaction if any for analysis and taking corrective measures.
- To monitor quality indicators pertaining to OP waiting, satisfaction level of service. To interact with quality cell on related matters.
- Round of outpatient service areas – reception lobby, emergency, Imaging, Echo, medical gases, OPD chambers, VIP Lounge, Sample collection, EPBX and Fresh rooms- to ascertain cleanliness, ambience, orderliness and readiness of the area for service delivery.
- To look in to staff discipline- personal tidiness & turnout etc. of the front office staff in particular and OPD staff in general.
- Similarly, to coordinate in capture of outpatient pharmacy revenue in relation to outpatients.
- To check ALS Ambulance routinely (on every 2nd day of week) to take stock on serviceability of equipment, cleanliness, tidiness and its functional conditions.

REFLECTIVE LEARNINGS:

- ✓ Management of manpower in the OPD
- ✓ Standardization of the processes in the OPD as defined by the hospital
- ✓ To achieve significant improvements in terms of wait time reduction, a series of strategies need to be implemented simultaneously. There is no single action that results in major reduction, but the combination of several strategies can cause a significant change.
- ✓ To streamline the OPD services of hospitals through customer focus and optimum utilization of the resources.
- ✓ Customers' satisfaction is the main factor. A new and more effective method has to be adopted to ensure customers' satisfaction.
- ✓ Analysis of the feedback forms & communicating the results to the respective departments.
- ✓ There is the need for health care facilities and hospital administrators to address gaps in human resources, logistics and other internal procedures
- ✓ Sophisticated wait-list management that incorporates patient urgency and reminders for contacting patients to see if they are still awaiting appointments needs to be in place for an effective management of OPD.
- ✓ Tracks and alerts should be in place so that relevant patient information is available before the appointment, such as radiology and lab tests, so that valuable clinic time is not wasted
- ✓ Importance of internal signage to improve communication and way finding.
- ✓ Referral management - referral guidelines and outpatient service protocols
- ✓ Counselling of the patient & his/her attendant
- ✓ Health education of the patients
- ✓ Coordination between different department to provide the quality services to the patients
- ✓ Multitasking
- ✓ Customer relationship management
- ✓ In house marketing (Public Relation management)
- ✓ Handling patients complaints related to the OPD services

DISSERTATION

REPORT

CHAPTER 1

INTRODUCTION

Patients are attended in various outpatient units within the hospital system, but almost invariably, a high percentage of these patients arrives and leave the hospital at various times. The amount of time a patient waits to be seen is one factor which affects the utilization of health care services [3] and patients perceive long waiting times as barriers to actually obtaining services[4]. An outpatient department represents a complex system through which many patients with varying needs pass each day. An effective appointment system is a critical component in controlling patient waiting times within clinic sessions [5]. In a competitively managed health care environment, patient waiting time play an increasingly important role in a clinic's ability to attract new business. It is difficult to sell services if individuals are dissatisfied with waiting time which is the length of time from when the patient entered the waiting room or the consulting room to the time the patient actually left the hospital [6].

Additionally, waiting time becomes a factor in retaining current users of the services. Patient satisfaction has emerged as an increasingly important parameter in the assessment of quality of health care; hence, healthcare facility performance can be best assessed by measuring the level of patient's satisfaction. A completely satisfied patient believes that the organization has potential in understanding patient needs and demands related to health care [7]. A study in the United Kingdom concluded that, patient satisfaction is directly correlated with waiting times to see a doctor [8] while another study found that, because of prolonged waiting times, a substantial number of patients left outpatient departments [3]. Time is a scarce commodity to someone seeking treatment at the hospital, particularly those who are in critical conditions.

Moreover, doctors also need to maximize their time, as they do not deal with inanimate objects but with the lives and well-beings of other human beings. This is especially so in a large hospital where doctors are involved with administrative work, reading reports, etc. and are constantly moving between departments. On the flip side of the value chain are the patients who are waiting for the doctors to attend to them. Waiting idly in the waiting room is certainly very unproductive as they could be back at home recuperating or even back at their jobs. Therefore, a delicate balance between the scheduling of patients' appointments and the availability of clinicians needs to be obtained for the

optimum utilization of both the clinicians' and patients' time.[9] Long waiting time in hospitals causes discontent among patients. Such delays in industrial hospitals can lead to man-hour loss and interfere with production. [10].

In today's fast growing world, customer is looking for hassle free and quick services. Meeting the customer requirements by the medical institutes with its limited resources is the challenge. This is only possible with optimum utility of the resources, through multi tasking in a single window system in the OPD for better services [11, 12].

In most Indian hospitals, Patients come to the OPD without prior appointment and patients need to wait for hours before doctors could see them. The situation would be especially worse for the elderly who have to queue up, even when they are not well.

Long waiting time in the Hospital is considered as an indicator of poor quality and needs improvement. Managing waiting lines create a great dilemma for managers seeking to improve the return on investment of their operations. On the one hand, customers dislike waiting intensely. If they feel they are waiting too long at hospital for service, they will either leave the line prematurely or not return to hospital the next time they need service. This will reduce customer demand and eventually revenue and profit. Furthermore, longer waiting times equal more customers in the building. Hence, it will need more space for the customers to wait in, which increases rent.

On the other hand, manager primarily reduces waiting times by increasing capacity, which is itself quite expensive and will reduce profit. Finding a waiting time that customers find acceptable while keeping utilization reasonably high is thus of critical operational importance but relatively unintuitive, for its turns out that the average waiting times can be quite long even when the capacity is significantly greater than demand. Solutions for the waiting time problems are specific to a hospital to another [13].

A study of this nature is critical to public appreciation of the quality of health care operating environment; hence, this study was aimed at assessing patients' waiting time and factors affecting waiting in the outpatients' departments, with a view to identify the

factors that affect waiting time and recommend ways of minimizing the delay. Data generated from the study could be used by hospital administrators to address gaps in human resources, logistics, infrastructures and other internal procedures towards ensuring an effective health care delivery system.

AIM: To undertake a waiting time analysis study in the OPD department and determine the *average waiting time* of patients coming for the doctor's Consultation & Investigations at National Heart Institute.

GENERAL OBJECTIVE:

To study the patient's waiting time in the outpatient clinic, with a view to identify the factors that affect waiting time and recommend ways of minimizing the delay.

SPECIFIC OBJECTIVES:

1.To determine the process flow of patients and the time spent in the Hospital through arrival and service characteristics

2. To understand the bottlenecks in the patient flow

3. To propose alternatives to make the patient flow process efficient with reduced waiting.

NEED FOR THE STUDY:

As we know that the patients coming to the hospital are already in grief and pain, increased waiting times and reduced service time at different departments add to their grievances. So, the aim of the hospital should be to ensure a smooth flow of the patient with minimal wait time and hassles in the updation of records. Reduction in the waiting time will improve efficiency of the hospital as more number of patients would be treated in the same period of time. Also, it will improve the patients' satisfaction, Quality of services and eventually revenue and profit of the hospital.

CHAPTER 2

REVIEW OF LITERATURE

Umar I et al (2011) studied that the amount of time a patient waits to be seen is one factor which affects the utilization of health care services. Patient satisfaction has emerged as an increasingly important parameter in the assessment of quality of health care; hence, healthcare facility performance can be best assessed by measuring the level of patient's satisfaction. This was a cross-sectional descriptive study carried out at the out patients' departments of the Usmanu Danfodiyo University, Sokoto. A total of 384 new patients were randomly selected into the study. A set of pretested questionnaires was used to extract information from the respondents; descriptive statistics was used for analysis. A total of 118 (31%) of the patients waited for less than an hour in the waiting room, while 371 (96.6%) spent less than 30 min with the doctor. More than half, 211 (55%) of the respondents were satisfied with the service delivery in the hospital, while only 63 (16%) of the respondents admitted to being given health talks while waiting to be seen by the doctor. Although majority of the patients waited for more than 1 h before being attended to, more than half of them were however satisfied with the services rendered to them. There is the need for health care institutions and providers to put in place measures aimed at reducing waiting time and ensuring patient satisfaction [(14)].

Pablo Santibáñez et al (2009) did a study on reducing patient wait times and improving resource utilization at British Columbia Cancer Agency's ambulatory care unit through simulation. They considered an ambulatory care unit (ACU) in a large cancer centre, where operational and resource utilization challenges led to overcrowding, excessive delays, and concerns regarding safety of critical patient care duties. They used simulation to analyze the simultaneous impact of operations, scheduling, and resource allocation on patient wait time, clinic overtime, and resource utilization. The impact of these factors has been studied before, but usually in isolation. Further, model considers multiple clinics operating concurrently, and includes the extra burden of training residents and medical students during patient consults. Through scenario analyses they found that the best outcomes were obtained when not one but multiple changes were implemented simultaneously. They developed configurations that achieve a reduction of up to 70% in patient wait times and 25% in physical space requirements, with the same

appointment volume. The key findings of the study were the importance of on time clinic start, the need for improved patient scheduling; and the potential improvements from allocating examination rooms flexibly and dynamically among individual clinics within each of the oncology programs. These findings were currently being evaluated for implementation by senior management [(15)].

A study was done by **Kumari R** et al (2009) on “Patient satisfaction in the government allopathic health facilities of lucknow district, India”. This study showed that the level of patient satisfaction was severely deficient in several areas and needed improvement for the achievement of optimal health of the people. The accessibility was difficult in 42% patients and waiting time was more than 30 min for 62.5% of those attending the tertiary level health facility. The satisfaction with the duration of the outpatient department (OPD) (64.6%) and the presence of signboards (46.6%) was also found to be low. It was concluded that the overall satisfaction regarding the doctor-patient communication was more than 60% at all the levels of health care facilities but that with the examination and consultation was less than 60% at the primary level as compared to more than 80% elsewhere. The most important motivating factor for the visit to the tertiary (48.2%) and secondary level (71.9%, 67.1%) of health facilities was the faith on doctors or health facility [(16)].

Arun KUMAR et al (2007) did a study which aims to find the optimal arrangement of consultation rooms in the specialist outpatient clinics of a hospital in Singapore to maximize the utilization factor. Doctors’ utilization and waiting time of the patients were also optimized in this research. This was done by building and validating queuing and simulation models to predict and model the real life variance and uncertainty in the outpatient clinics. The results from the queuing theory served as a good gauge to compare the simulation results to confirm the validity of the model. Study concluded that the use of the consultation rooms must be flexible to accommodate future increases in patient volumes, so that when there are higher volumes than usual, the clinic can adapt

appropriately. Hence, the GM and RAI clinics need 4 and 3 doctors, respectively. This would increase the CRU from 47% to 63% for GM and 33% to 60% for RAI. Therefore this solution provides a significant increase in server utilization, and CRU [9].

A study was done by **CHEN Bai-lian** et al (2006) on "Impact of adjustment measures on reducing outpatient waiting time in a community hospital" in Japan. Data from a total of 10,092 patients and 26,816 medical consultations were collected in the study and 19,947 medical consultations were included. The average of the total visit time for outpatients in this hospital was 43.6 minutes in the morning, 19.1 minutes in the afternoon, and 34.3 minutes for the whole day studied period. The results suggested that waiting time for outpatients could be greatly reduced through the introduction of appointment system and flexible demand-orientated doctor scheduling according to the numbers of patients waiting at different time of the workday [17].

Meguid T et al (2006) had done "A study on flaws in the out-patient flow at a semi-rural hospital in northern Namibia". During 2 weeks in November and December 1996, all out-patients were followed throughout their stay. Service times, waiting times, time on arrival, time on departure and completeness of the service were recorded. All in all, 4999 patients, who had 17,436 contacts with healthcare providers, were recorded. Approximately 500 out-patients were seen daily with 48.43% follow-ups and 15.24% referrals. Two-thirds (74.79%) of all patients arrived before 1100 h. Between 200 and 300 patients were present in the OPD at any time between 0900 h and 1600 h. Twelve per cent (621 patients) left the hospital with an incomplete service. Of the 1511 patients screened by the nurses only 20 (1.32%) were treated by them. It was concluded that the way the work was organized in the hospital was inefficient and client unfriendly. Inefficient, because available expertise was not utilized and client unfriendly, because this leads to situations where patients were denied the service to which they were entitled [18].

P.R. Harper (2003) et al had done study on reduced outpatient waiting times with improved appointment scheduling: a simulation modelling approach. An outpatient department represents a complex system through which many patients with varying needs pass each day. An effective appointment system is a critical component in controlling patient waiting times within clinic sessions. Current waiting times are often unacceptable and place great stress on clinic staff. This paper describes the development and use of a detailed simulation model of an Ear, Nose and Throat (ENT) outpatient department. The simulation allows various appointment schedules to be examined and their effects on the clinic evaluated. The model has been used to identify a number of critical factors that influence patient waiting times and the buildup of queues in the clinic. Alternative appointment schedules have been shown to drastically reduce patient waiting times, without the need for extra resources, and enable the department to move towards meeting the UK Government's Patient's Charter[(5)].

Another study on “Outpatient experiences in acute hospitals” was conducted by **De Brún C** et al (2002) in Ireland. 3,037 OPD attendees were surveyed, 75.7% of these attendees responded. Of these 94% were satisfied. Doctors and nurses were perceived as friendly by 61% and 72%, professional by 44% and 30%, rushed by 8% and 7%, and rude by 1% and 1% of patients, respectively. It was found that age (being older), sex (being male), pain level (no pain), decisions about care (wanting more involvement) and being satisfied with their waiting time from arrival to being seen were significantly associated with a greater likelihood of being satisfied overall [(19)].

Vijaya Bharat et al (1998) had done a study on Long waiting time in hospitals causes discontent among patients. Such delays in industrial hospitals can lead to man-hour loss and interfere with production. Crowded out-patient department (OPD) of the Cardiology section of Tata Main Hospital, Jamshedpur shared some commonality with chronic congestive heart failure on account of the ‘volume overload and inefficient disposal’ in both the situation. Therefore, the principle of congestive heart failure

therapy was applied to solve this problem. Crowding due to all the patients coming at the same time was overcome by giving appointment to chronic patients on regular visits. Efficiency was improved by increasing the availability of doctors and introduction of practice guidelines. Scheduling elective procedures after the OPD and starting a pacemaker clinic led to better time management. After two months of implementing these measures, the average waiting time for consultation decreased from 58.6 minutes to 7.7 minutes without any additional manpower or resources [10].

Singh Satyaveer had done “A study of waiting time in OPDs” in Air Force Institute of Dental Sciences. The study was done over the period of 5 weeks. It included studying and observing the OPD for a period of 02 weeks during which a general trend of patients’ arrival, waiting time and departure was observed and noted. It was found that the initial waiting time was very high. The solution recommended was to appoint some other consultant or duty doctor for the period of initial one or two hours, as per the requirement of each department in the OPD so that all are benefitted [13].

Dr. Francis C. K. Mok et al (1992) had conducted “An audit of the patients’ waiting time in a geriatric specialist clinic” in Hong Kong. A prospective assessment concerning the time spent in waiting for the Geriatric patients in attending the specialist clinic was carried out. It showed that patients had to wait for more than three hours each time for consultation and the earlier they arrived at the OPD, the longer the time they had to spend in waiting [20].

CHAPTER-3

METHODOLOGY

Study Setting: National Heart Institute, East of Kailash, Delhi.

Study Design: The study design is cross-sectional analysis in nature.

Research Methods: The research method used was quantitative analysis.

Sample Size: A random sample of 680 patients (who came for cardiac consultation), 2172 (who came for investigations) & 150 patients (who were interviewed) was taken for administrative convenience.

Sampling technique: A random selection study of the patients coming to the outpatient department for the doctor's Consultation & Investigations at National Heart Institute was conducted for 8 weeks.

Selection criteria

- **Inclusion Criteria:** Patients coming for the Cardiac consultation & investigations in the outpatient department.
- **Exclusion Criteria:** Patients who are missed in between or those who come to the outpatient department for purposes other than Consultation & investigations, like those who come for admissions & enquiry.

Type of data collected:

Primary data including

I. Waiting time for the cardiac consultation & investigations was collected for 8 weeks (February & March, 2011) in the OPD. Data was collected on following variables:
    - Patients' registration time
    - Appointment time

- Waiting time

II. Waiting experience of the patient (who were coming for the cardiac consultation & Investigations) by using feedback form in the OPD was collected for 2 months (February & March, 2011) Data was collected on following scale:

    - Excellent
    - Very good
    - Good
    - Fair
    - Poor

III. Perceived causes of long waiting time by the patient

IV. Secondary data for the month of January, 2011 was taken from the quality department.

Tool used for collecting the data is:

- Tracking-form for waiting time
- Feedback forms to know patients' experience for waiting time & perceived causes of long waiting time

Data Analysis: Data was analyzed using excel software.

DEFINITION OF IMPORTANT TERMS:

Waiting Time is the time spent by the patient in the outpatient waiting area before entering the diagnostic or consultation cubicle.

Service Time is the time consumed in the diagnostic and consultation cubicles.

LIMITATIONS OF THE STUDY

- The duration of the study is only two months.
- The results of the study are hospital specific so these cannot be generalized.

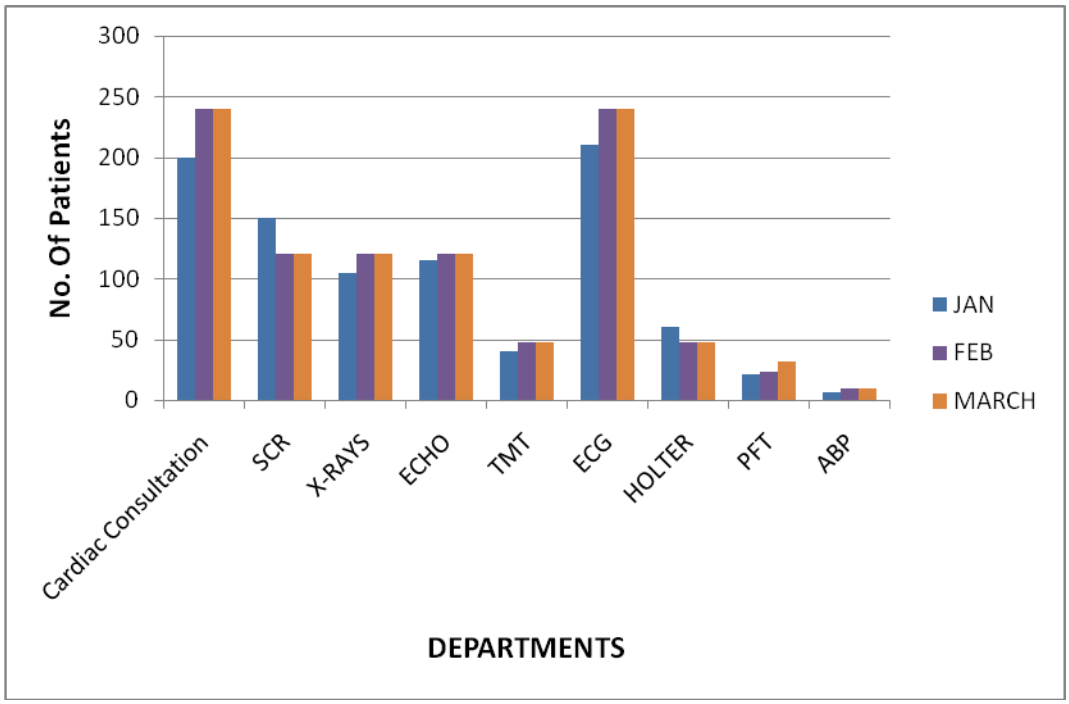
CHAPTER-4

RESULTS & FINDINGS

TABLE: 4.1 TOTAL NO. OF PATIENTS FOR CARDIAC CONSULTATION & INVESTIGATIONS

S.NO.	MONTH	Cardiac Consultation	SCR	X-RAYS	ECHO	TMT	ECG	HOLTER	PFT	ABP
1	JAN	200	150	105	115	40	210	60	21	6
2	FEB	240	120	120	120	48	240	48	23	9
3	MARCH	240	120	120	120	48	240	48	32	9
TOTAL		680	390	345	355	136	690	156	76	24

Fig: 4.1 TOTAL NO. OF PATIENTS FOR CARDIAC CONSULTATION & INVESTIGATIONS

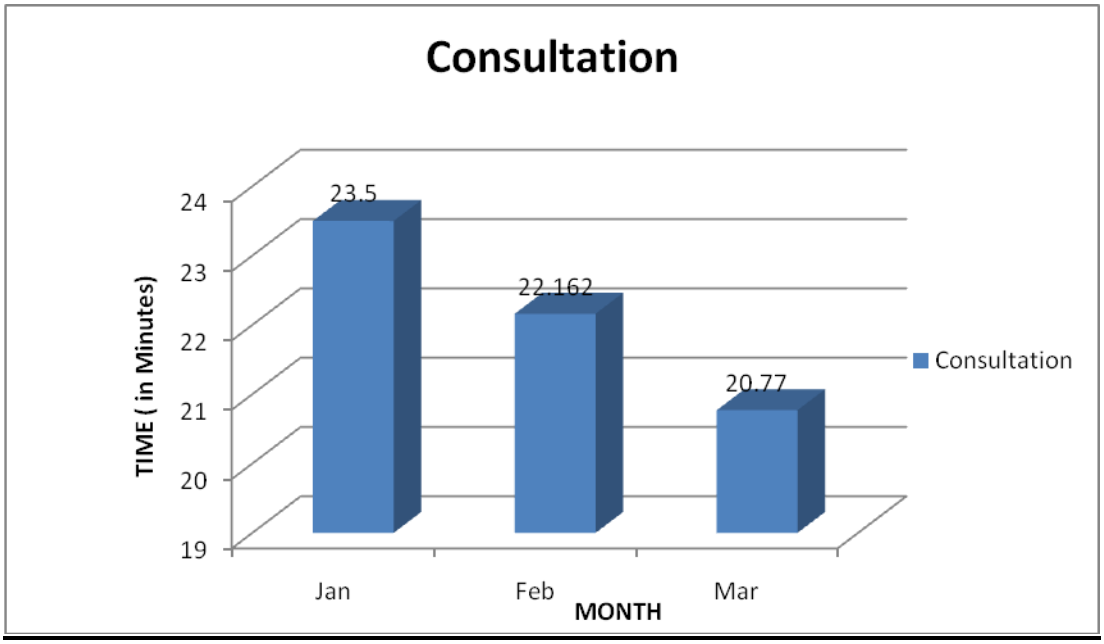


The above graph depicts the number of patients in the month of Jan, Feb., March for cardiac consultation as well as for Investigations. The no. of patients for the month of Feb. & March is same.

TABLE:4.2 AVERAGE WAITING TIME FOR THE CONSULTATION AND INVESTIGATION ROOMS (Jan, Feb., March)		
S.NO.	DEPARTMENT	AVERAGE WAITING TIME
1	CARDIAC CONSULTATION	22.14
2	SCR	7.16
2	X-RAYS	9.42
3	ECHO	25.68
4	TMT	10.06
5	ECG	6.33
6	HOLTER	13.11
7	PFT	13.41
8	ABP (AMBULATORY BLOOD PRESSURE)	11.62

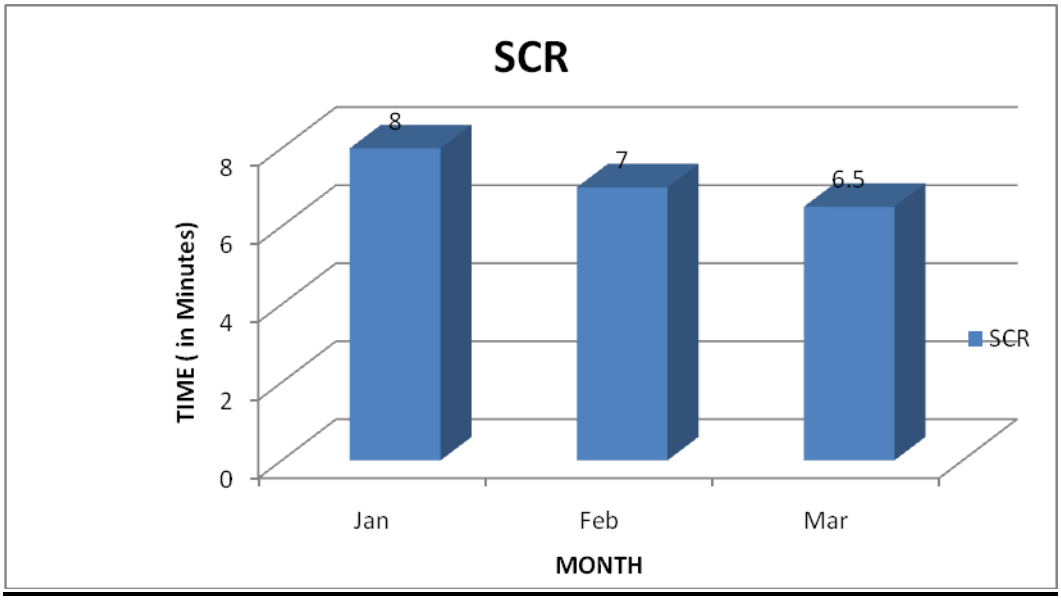
According to the above figure, average of the three months (Jan, Feb., march) can be seen and the highest waiting time is for the Echo services and then for the cardiac consultation.

Fig: 4.2 Average waiting times for the cardiac consultation for the month of Jan, Feb., mar.



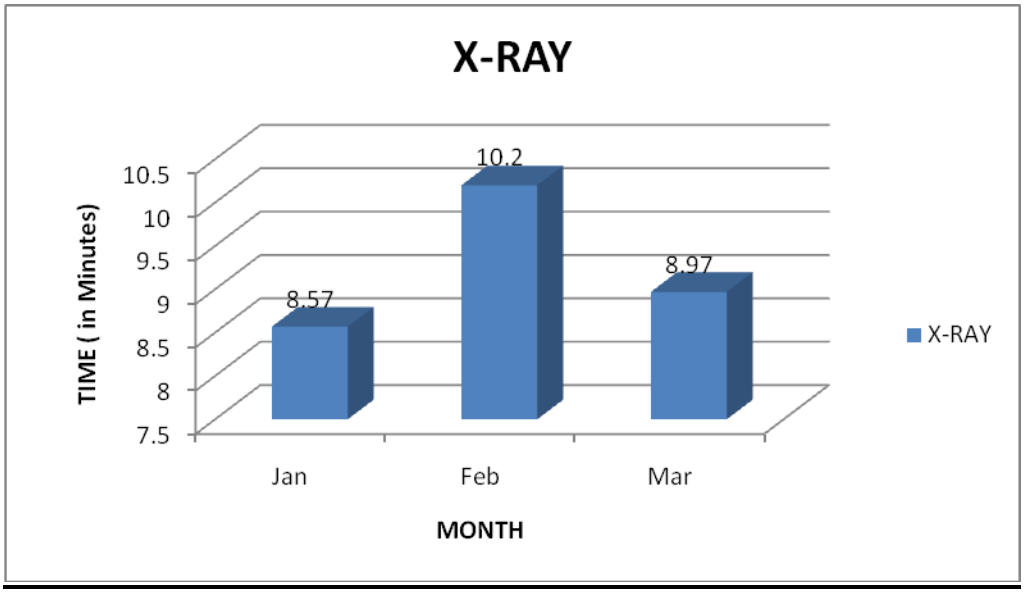
The above graph predicts that the waiting time is highest in the month of Jan i.e.23.5 minutes and lowest in the month of march i.e. 20.77 minutes. Waiting time is decreasing every month.

Fig: 4.3 Average waiting time for the Sample collection for the month of Jan, Feb., march



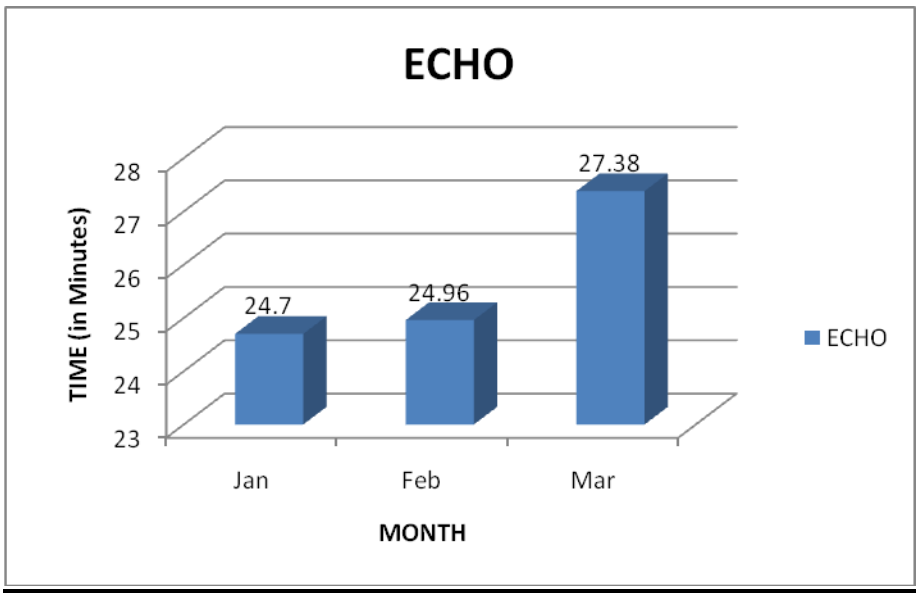
The figure dictates that the waiting time is highest in the month of Jan i.e.8 minutes and lowest in the month of march i.e. 6.5 minutes. Waiting time is decreasing every month.

Fig: 4.4 Average waiting time for the X-rays room for the month of Jan, Feb., mar.



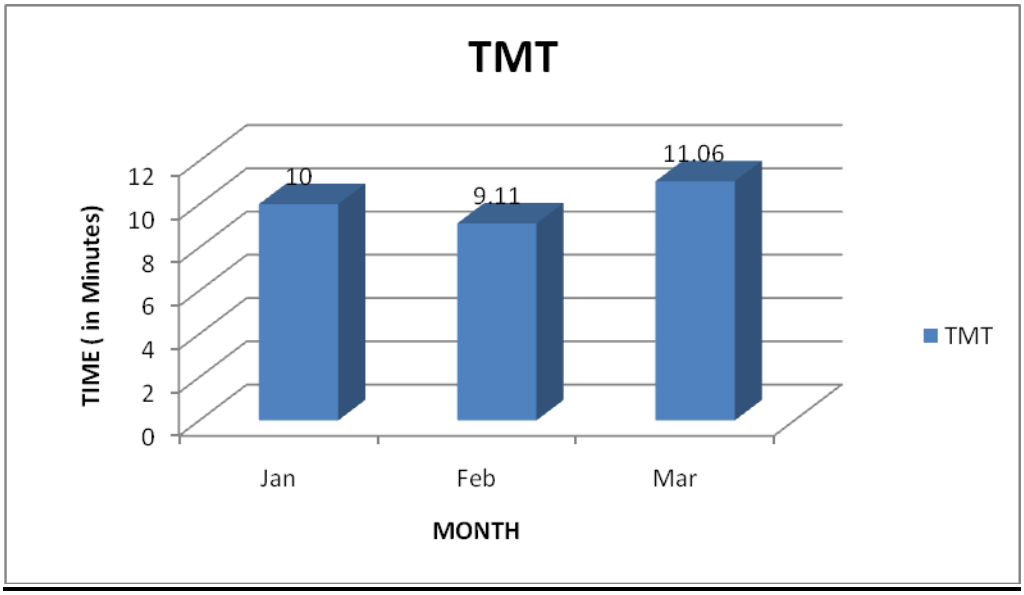
The figure dictates that the waiting time is highest in the month of feb. i.e.10.2 minutes and lowest in the month of Jan i.e. 8.57 minutes. Waiting time is fluctuating.

Fig: 4.5 Average waiting time for the ECHO for the month of Jan, Feb., mar.



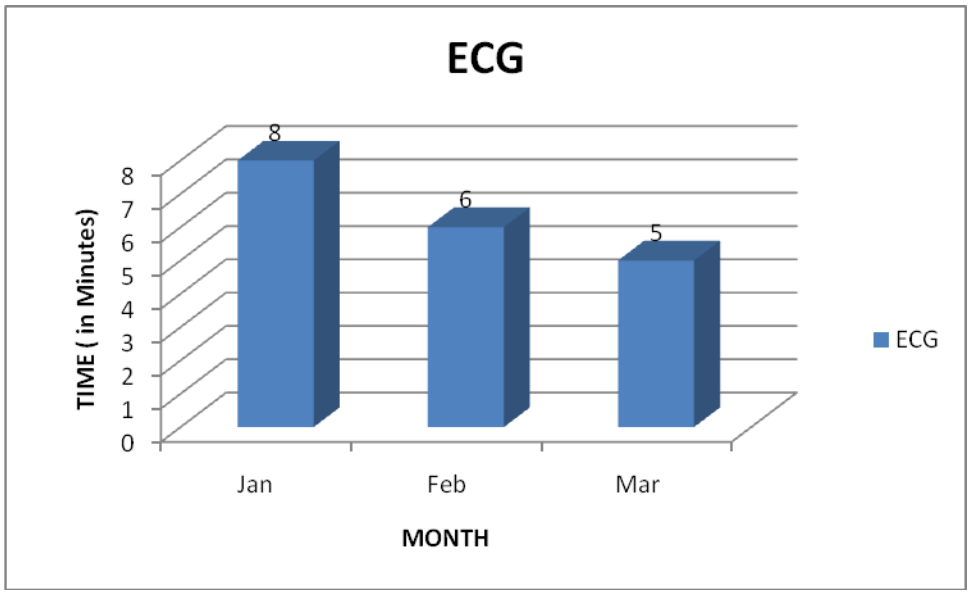
The above figure illustrates that the waiting time is highest in the month of march i.e.27.38 minutes and lowest in the month of Jan i.e. 24.7 minutes. Waiting time is increasing every month.

Fig: 4.6 Average waiting time for the TMT for the month of Jan, Feb., mar.



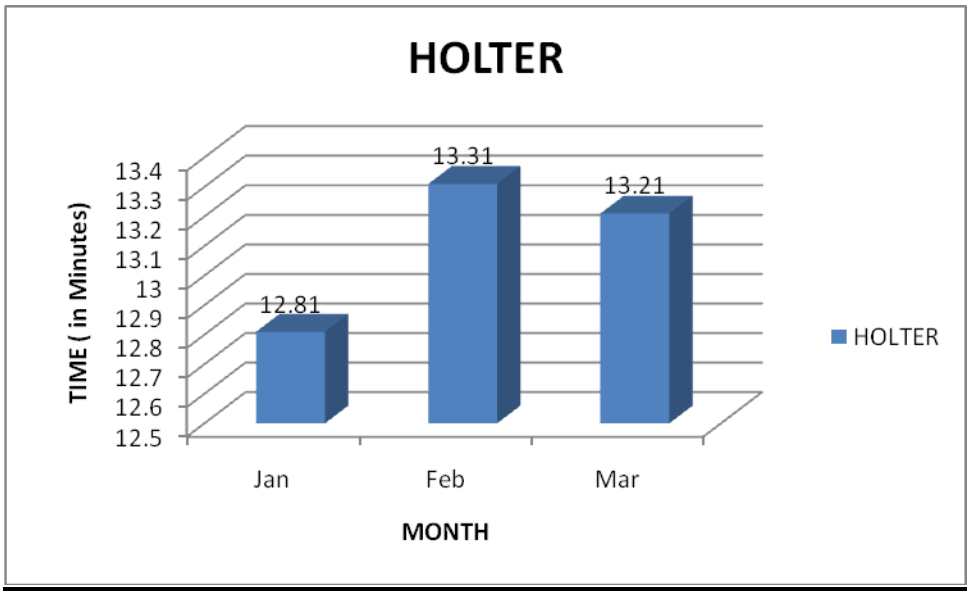
The above figure illustrates that the waiting time is highest in the month of march i.e.11.06 minutes and lowest in the month of Jan i.e. 10 minutes. Waiting time is increasing every month.

Fig: 4.7 Average waiting time for the ECG for the month of Jan, Feb., mar.



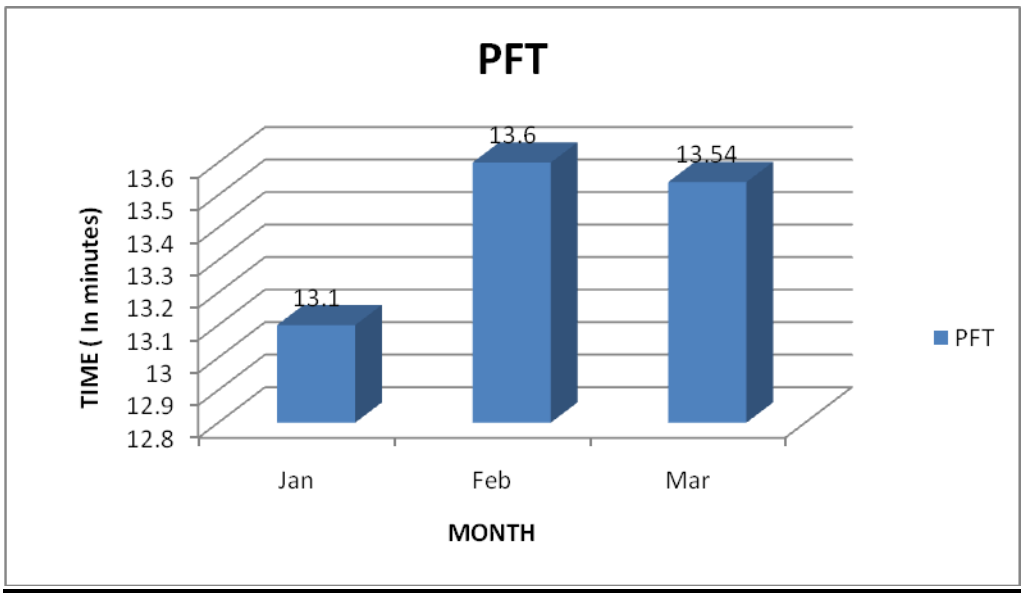
According to the bar graph, the waiting time is highest in the month of Jan i.e.8 minutes and lowest in the month of march i.e. 5 minutes. Waiting time is decreasing every month.

Fig: 4.8 Average waiting time for the HOLTER for the month of Jan, Feb., mar.



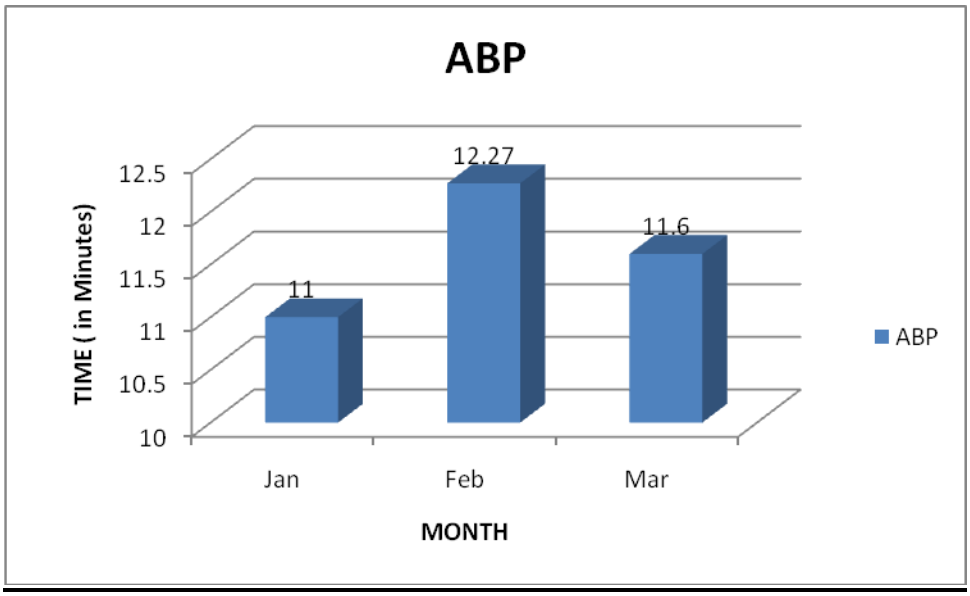
The graph reprents that the waiting time is highest in the month of Feb. i.e.13.31 minutes and lowest in the month of Jan i.e. 12.81 minutes. Waiting time increased first in the month of feb. and then decreased from 13.31 minutes to 13.21 minutes.

Fig: 4.9 Average waiting time for the PFT for the month of Jan, Feb., mar.



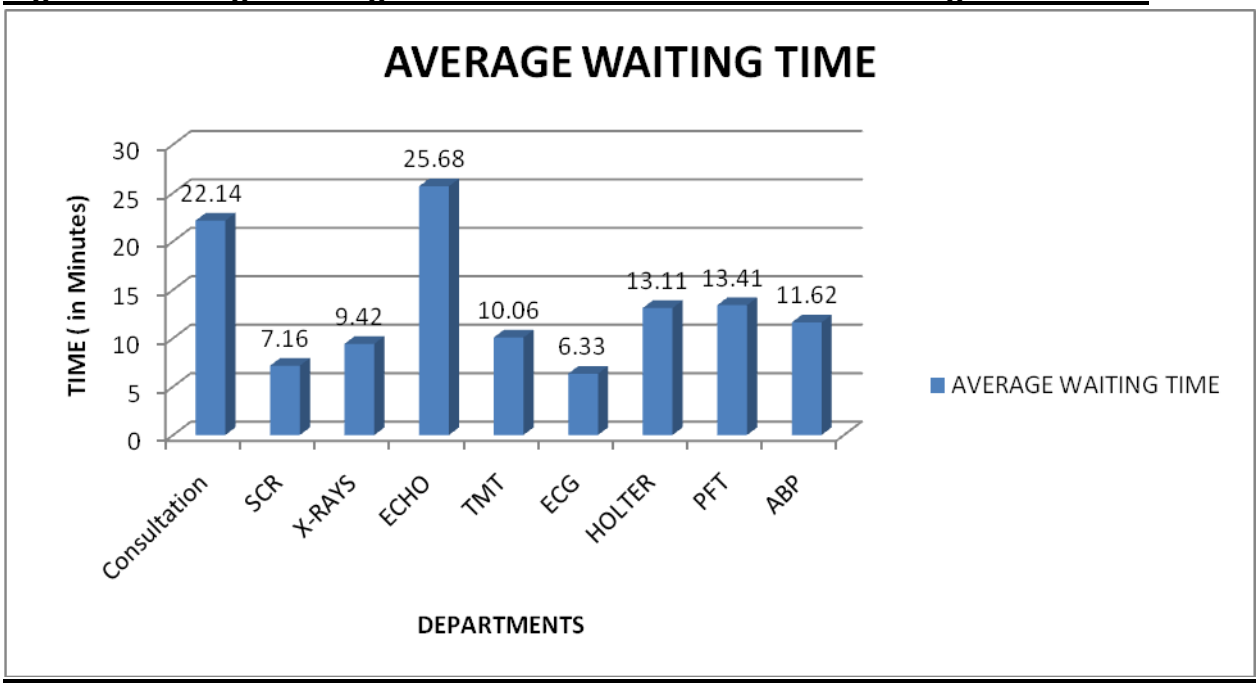
The graph reprents that the waiting time is highest in the month of Feb. i.e.13.6 minutes and lowest in the month of Jan i.e. 13.1 minutes. Waiting time increased first in the month of feb. and then decreased from 13.6 minutes to 13.54 minutes.

Fig: 4.10 Average waiting time for the ABP for the month of Jan, Feb., mar.



The figure exemplifies that the waiting time is highest in the month of Feb. i.e.12.27 minutes and lowest in the month of Jan i.e. 11 minutes. Waiting time increased first in the month of feb. and then decreased from 12.27 minutes to 11.6 minutes.

Fig: 4.11 Average waiting time for the consultation and investigation rooms

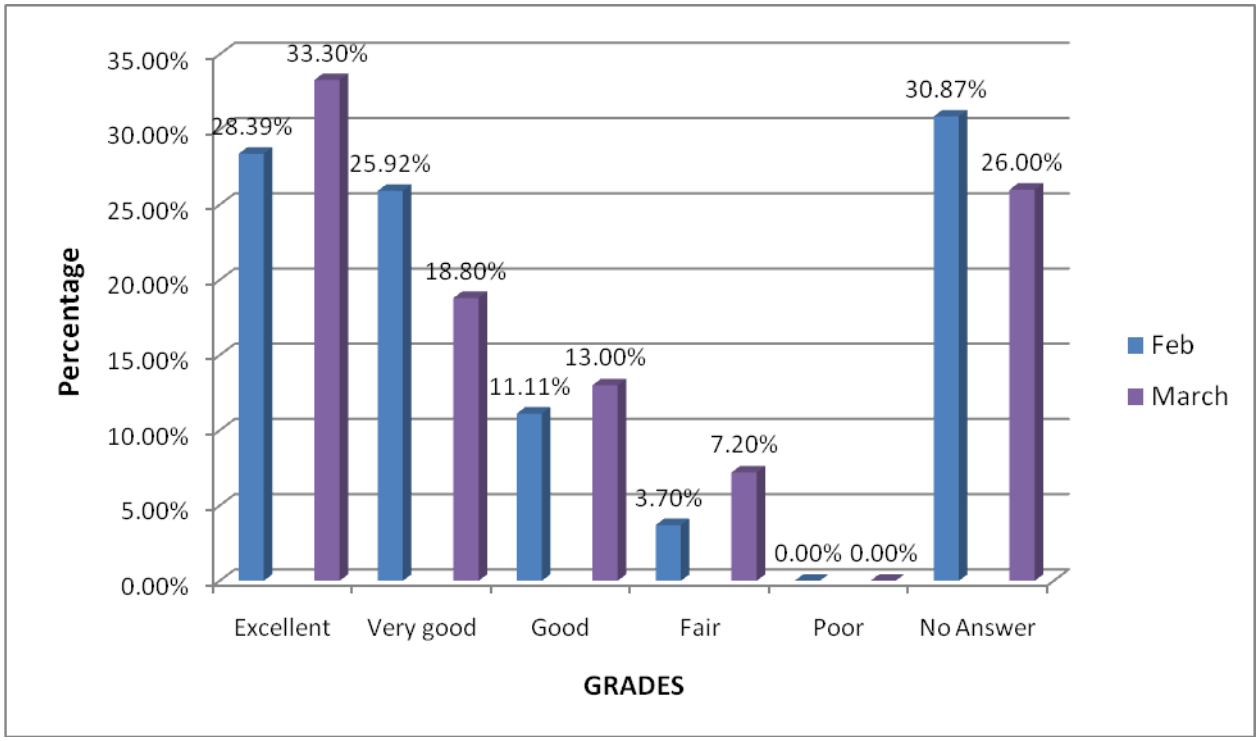


The figure shows that the average waiting time for three months (Jan, Feb., march) and the highest waiting time is for the Echo services followed by the waiting time for the cardiac consultation. Whereas the lowest waiting time is for the ECG, SCR followed by the X-rays.

TABLE: 4.3 Patients' waiting experience

MONTH	Grades for patients' waiting time experience (in percentage)					
	Excellent	Very good	Good	Fair	Poor	No Answer
FEB	28.39%	25.92%	11.11%	3.70%	_	30.87%
MARCH	33.3%	18.8%	13%	7.2%	_	26%

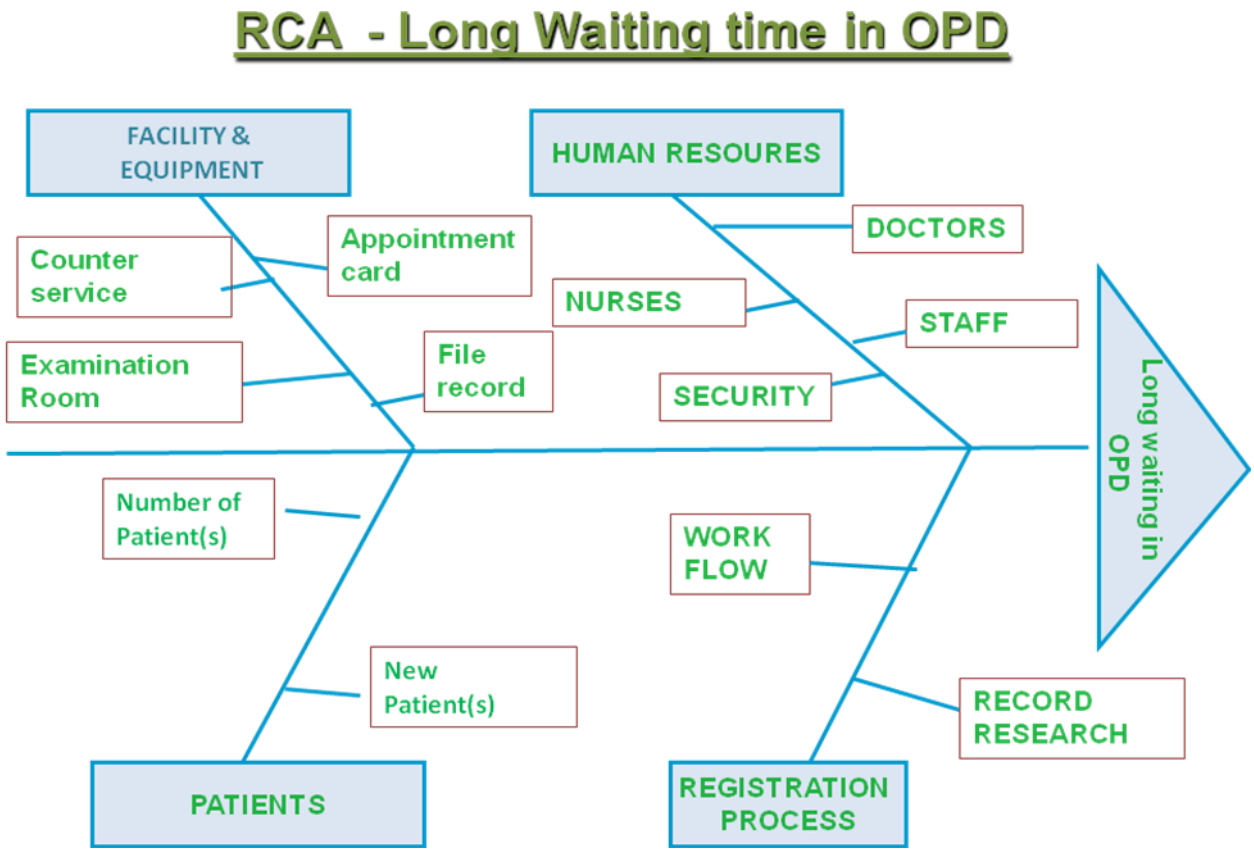
Fig.4.12 Patients' waiting experience



The above bar graph testifies the patient experience for the waiting time varies from excellent to poor. In Feb. 28% patient had an excellent experience & in March 33%

patient had an excellent experience. And the percentage of no answer has decreased from the month of Feb to march. The percentage of patient who has not answered at all is 30% in Feb., but has reduced to 28% in march.

Fig: 4.13

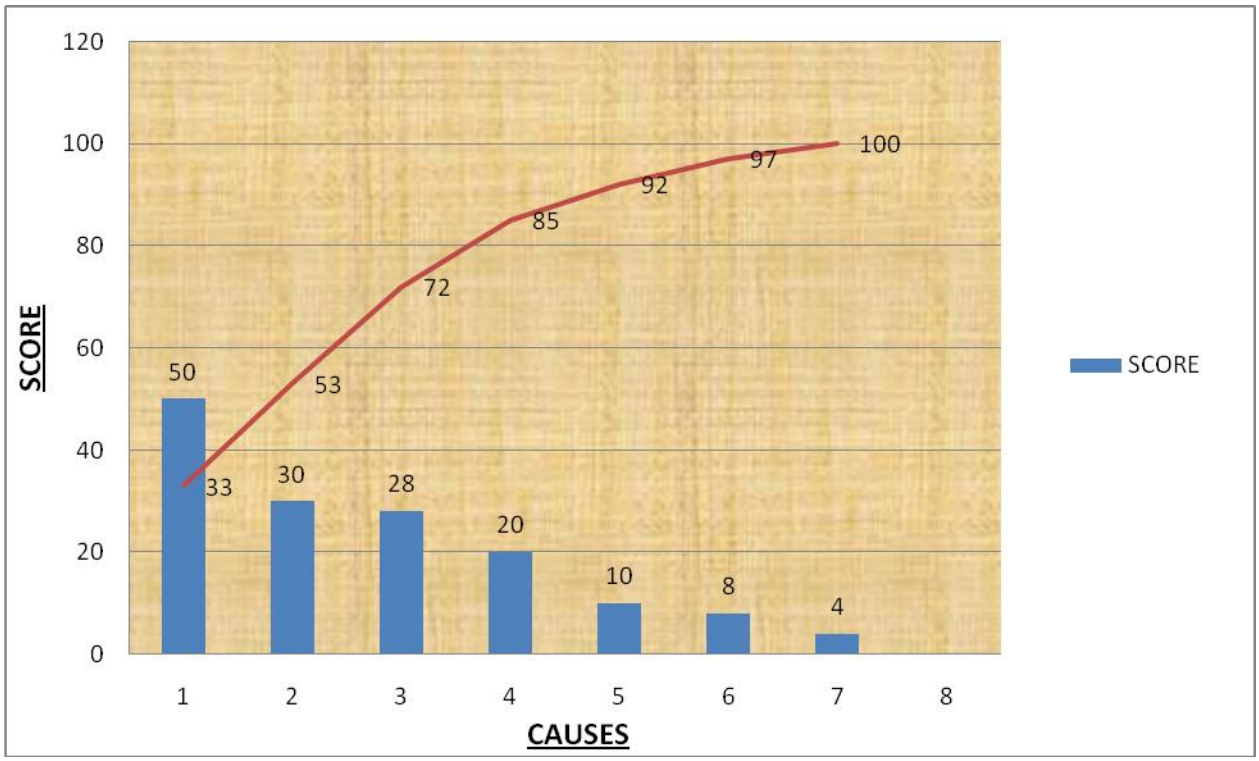


By using Pareto chart together with the cause and effect chart above, factors leading to long waiting time could be identified.

TABLE: 4.4 Patients' perceived causes of long waiting time

S.no.	CASE	Causes of long waiting time	SCORE	PERCENTAGE	CUMULATIVE (%)
1	A	Doctor arrived late	50	33	33
2	B	Patients jumping queue	30	20	53
3 4	C	Doctor taking too long a time to see a patient	28	19	72
5	D	Insufficient Counter Staff	20	13	85
6	E	Long search for reports	10	7	92
7	F	Large numbers of patients with few Doctors/technicians	8	5	97
8	G	No response	4	3	100
		TOTAL	150	100	

Fig: 4.14 Patients' perceived causes of long waiting time



From the analysis above, three main problems which accounted for 80% of long waiting time were:

a. Doctor arrived late
b. Patients jumping queue
c. Doctor taking too long a time to see a patient

CHAPTER 5

DISCUSSION

The long waiting time observed in this study may not be unrelated to the realities in developing countries where health care providers are overwhelmed by large numbers of patients. This study attempts to produce quantitative data to assess the waiting time for the consultation & various investigations.

The study findings showed that the average waiting time for various services in the OPD is below 30 minutes. The Institute of Medicine (IOM) has since recognized the problems of prolonged waiting time resulting in dissatisfaction among patients and had therefore recommended that at least 90% of patients should be attended to within 30 min of their scheduled appointment time [(21)]. The registration time and waiting time at the primary level was different to the observation of Dr. Syed Mohamed Aljunid [[22]] in his study in Malaysia where the patients waited for 52 minutes on an average. Differences in satisfaction with long waiting time as compared to other studies by Dr. Syed Mohamed Aljunid, [(22)] van Uden *et al* [(23)] and Mahfouz *et al,* [(24)] could be attributed to the differences in the perceptions and expectations of the people. Reduction of the waiting time by triage of the patients and sending them to the appropriate doctor would save their time and also provide appropriate treatment.

The results of the study showed that 33.3% patients' waiting experience was excellent & 18.8% patients' waiting experience was very good in the month of March. It has been observed in a study done by umar I *et al* [(20)] that patients are least satisfied while waiting times are longer than expected, relatively satisfied when waiting times are perceived as equal to expectations and highly satisfied when waiting times are shorter than expected significant correlation between satisfaction and waiting time, to see the doctor as those that waited for shorter periods, to see the doctor expressed satisfaction with services they assessed. The time spent before seeing the doctor can always be made useful if patients are engaged in activities to reduce boredom [(20)].

RCA done for the long waiting time in OPD found out that the work flow & record research followed in the registration area is also one of the major factors being

observed in the OPD for the increase in the waiting time. A study undertaken also found that a major relevant process flaw that they derived from these data includes the lack of stored or “prework” prior to the patient visit [25]. New patients in the system were asked to fill out a registration card that provides basic information, which was taking up to 10 minutes to complete. Although patients were technically on time, they were made late arrivals by the confines of the process as they took a long time for completing the form in the registration area & for the search of the report or executive summary.

In India, patients will have to wait longer on the queues before seeing their providers, as long as the imbalance in the doctor –patient ratio is not addressed. In the study, the commonest reason adduced by our respondents (33%) for the long waiting time was, few doctors arriving late in the OPD. This is a common finding in most health care centers across India. Similar reasons were observed in the study from Jos University Teaching Hospital (JUTH), Nigeria (Thatcher, 2005) [26].

The result of the study revealed the second commonest reason is patients jumping of the queue which is 20%. Queuing analysis reported in another case study provided a basis for estimating medical staff size and number of beds, which are two very important resources for outpatient and inpatient services in a large hospital, and all other hospital resources in one way or another depend on them [27].

The study also showed that the third cause perceived by the patients is that doctors are taking too long to see a patient i.e. service time is high is 19%. With the implementation of quality reporting, there is an increased emphasis on efficiency and patient satisfaction. As the number of late patients in a clinic increases, the utilization of the physician’s time significantly decreases. Also clinic process analysis indicates that this is likely secondary to such reasons as poor communication between the office support staff and the physician as to when the patient arrives in the room and also the fact that appointments are scheduled for inappropriate amounts of time, either too long or short, where multiple patients are “overbooked” at the same time creating a scheduling

bottleneck. With the variety of patients visits categorized simply as either new or return, this inflexibility in scheduling does not capture the true amount of time needed for each visit. Many times, return postoperative patients require only 5-minute visit, whereas patients who require surgical treatment counseling may require upwards of one hour. The ability to project estimated visit times prior to the clinic session and schedule the number of patients appropriately would more closely match the demand and supply of outpatient visits and improve patient flow.

Finally, study found that the need to automate patient arrival would be very helpful as many times patients arrived on time and were not properly logged into the record as a result of manual work [(25)].

The result of the study showed that insufficient counter staff is also one of the reason perceived by the patients i.e. 13%. In most Indian hospitals, patients come to the OPD without prior appointment and wait for long. However, long waiting time in any service sector is considered as an indicator of poor quality needing improvement. Increasing the number of staff and OPD hours are apparently simple but expensive solutions and do not address the problem [(10)]. According to the 8% patients, who were interviewed large number of patients with few doctors & technicians is also a reason. By reorganizing the work and introducing appointment to regular patients, the average waiting time was reduced within the available resources [(10)].

CHAPTER 6

CONCLUSION

The focus of a hospital is to not only to treat the patients but also to provide an environment which acts as a catalyst in their recuperation. But, unfortunately, during the work process, there occur a lot of deviations which disturb the workflow. OPD service forms an interface between the community and the hospital. Its quality gives impression of the hospital image to a large proportion of the society. So, a hospital must target to give its OPD service as best as possible so as to have a positive image and also run profitably.

There is continuous need for health care facilities and hospital administrators to address gaps in human resources, logistics and other internal procedures aimed at reducing waiting times and thus ensuring an effective health care delivery system. The waiting time forms an integral part of the quality service and therefore should not be overlooked. Constant efforts are required to reduce it to the minimum and therefore smoothen the overall process of patient care delivery. Regular studies must be done to ensure minimum time before consultation and ultimately improve the patient satisfaction about the patient care provided. Hence the study tries to capture waiting time & its causes which would help to monitor and control the prolong waiting time in the OPD. The report also shows that smooth patient flow & waiting time is directly related to increase in patient satisfaction.

CHAPTER 7

RECOMMENDATIONS

PROBLEMS OBSERVED:

- **Prolonged waiting time**
    - Longer tea breaks increase patients' queues and hence waiting time at the departments.
    - Delay for dispatch of laboratory specimens, conduct of investigations, reports updation because –
        - Lack of sufficient helpers during the peak hours – only one general duty assistant available for samples dispatch and only one technician in labs for reports updation
        - Critical equipments out of order – only one ECHO machine available & timings for the OPD & IPD patient's clashes.

- **Dissatisfaction with quality of service**
    - Unfamiliarity with procedures to be followed to avail service, especially to carry out laboratory and x-ray investigations after consultation
    - Improper guidance of procedures to be followed, location of departments
    - Multiple location points
    - Incomplete information on appointment, revisit required to collect the reports
- **Dissatisfaction with amenities**
    - Insufficient seating accommodation in front of Consultation & investigation rooms

- Patients with prescribed additional tests like, thallium, bone scan etc. needs to be sent to nuclear medicine department outside the OPD area.

- **Other problems**
  - Patients forget PP time – while waiting for another test or sometimes go out or sleep, so they are needed to be reinforced for the same.
  - After every test, patient reports to reception counter, so that time is wasted in motion.
  - For every test, patients have to change his/her clothes.

MEASURES FOR OPD PROBLEMS:

1. Queuing & Waiting Time Problems:

- **Appointment System**

At the time of appointment, care should be taken to ensure that a large number of patients are not called up at the same time. Also, patients should be explained the pre-requisites for consultation & investigations and given prior information that they would have to take an appointment with the cardiologist for next visit. Staggering of the appointment times can decongest the crowd, shorten the queues and lessen the unnecessary waiting times of the patients.

Queue jumping by the patients should not be entertained by the doctor. Also new patients should be given different OPD slot to avoid the breakage in the flow of old patients & patients with appointment.

The appointment of the particular time can be for an individual or for a block of patients. As opposed to individual appointment system, the block appointment system is intended to provide a pool of patients so that the investigation departments will at no time find themselves idle.

- **Start OPD on time & Prolonged OPD timing**

Unpunctuality should be avoided on every cost. The staff must start the clinic as per the declared timings and always adhere to these Timings.

Prolonging the OPD timings till late afternoon or the evening with a suitable break for the staff would enable a larger number of patients to be dealt with. Also the service time of the doctors should not exceed beyond the benchmark time. Doctor should report on time, regular late comers must be dealt with strictly. In case the doctor is turning up late, the patient should be informed 1hour prior to the appointment time.

2. Physical Facilities Problems

Sufficient waiting spaces, both at the central waiting area and at the investigation rooms must be provided, with toilets, drinking water and comfortable seating. The structure of the OPD should be designed such as to ensure that the design of OPD promotes smooth flow of the patients.

3. Resource Problems

Additional staff should be deployed at the labs for sample dispatch and reports updation. An additional ECHO machine should be made available in the OPD department.

4. Co-ordination problems

With so many activities simultaneously occurring within a short span of time of 4 to 5 hours in a busy OPD, the prime requirement is coordination and control. All the departments in OPD should work in coordination to ensure shorter waiting time and queues at the departments and hence patient comfort. Coordination can be made more effective through the advance information to the various investigation departments & as well as to the GDAs standing outside the consultation chambers to deal with a queue of the patients.

5. Other Measures

- At the reporting counter, the procedure for the cardiac consultation & investigations should be explained to the patients. Reinforcement should be given to patients to ensure that they give their post-prandial blood samples on time.
- A changing room should be provided at the OPD so as to reduce the patient's service time at various departments in changing clothes for various investigations.
- Keep the patient engaged in other activities like watching TV, reading magazines, Health educations through various mediums.
- A customer help desk should be present in OPD for handling patients' grievances.
- Suggestion box should also be introduced in the OPD.

CHAPTER 8

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ANNEXURE

ANNUXURE –A

TRACK FORM FOR OPD WAITING TIME

TRACK FORM FOR OPD WAITING TIME

DATE:

NAME OF THE DOCTOR:

S.No	PATIENT NAME	WALKIN / APPOINTMENTPATIENT	TIME OF REGISTRATION	APPOINTMENT TIME	IN TIME

APPENDIX-B

FEEDBACK FORMS OF THE PATIENT

OPD FEED BACK FORM

5	
4	
3	
2	
1	

Name: _____

Profession: _____

Add & Mobile no: _____

Date:

Rating Criteria

1. Hospital Accessibility	5	4	3	2	1
2. The services rendered and professionalism displayed by the Front office/ reception Staff	5	4	3	2	1
3. Signs & Guiding to reached the facilities	5	4	3	2	1
4. Waiting experience for your turn	5	4	3	2	1
5. Total time spent from arrival to departure					
a. time taken in documentation process……..min.	5	4	3	2	1
b. waiting time after completion of documentation till meeting with physician……..min.	5	4	3	2	1
6. Explanation of ailment/ disease and treatment by the attending physician	5	4	3	2	1
7.The services rendered by the Diagnostic services					

a. Lab	5	4	3	2	1
b. X- Ray	5	4	3	2	1
c. USG	5	4	3	2	1
8.Courtesy, Co-operation and assistance extended by interactive staff of hospital during visit	5	4	3	2	1
9. Service at cafeteria, if availed	5	4	3	2	1
10. Hygiene, Cleanliness and maintenance	5	4	3	2	1
11. Ambience in totality	5	4	3	2	1
12. would you recommend NHI to others					
13. Perceived causes of long waiting time • Doctors coming late to the OPD • Insufficient counter staff • Doctor taking too long a time to see a patient • Long search for reports • Patients jumping queue • Large no. of patients with few doctors/ technician Your valuable Comments: _____ _____					