ACKNOWLDGEMENT

I am greatly indebted to Dr. Hem Chandra HOD, Hospital Administration, S.G.P.G.I. for providing me the opportunity to undertake the study under his able guidance and supervision. His expertise really helped in taking the right path.

I extend my deep appreciation and gratitude to all those who directly or indirectly contributed in the completion of the project work "Steamlining the discharge Process at SGPGIMS" I take this personal opportunity to personally thanks to all those people without whose interest, time and assistance, this study would not have been possible.

My sincere acknowledgement goes to Ms. Anupama Sharma for her kind assistance and support throughout our Dissertation.

I take the opportunity to express deepest respect for my parents for their blessings and my husband for moral support to pursue this study.

Last but not the least; I would like to specially thanks all my friends for their valuable time and interest.

Thank you all

Dr. Shubhra Mishra

ABSTRACT

BACKGROUND: Patient satisfaction has been an important issue for health care managers. Following increased levels of competition and the emphasis on consumerism, patient satisfaction has become an important measurement for monitoring health care performance. Hospital discharge process is one of the vital indicators of satisfaction among patients. The discharge process represents the final contact between the patient and the hospital health professionals, and the outcomes of all procedures undergone by the patient are recorded at this stage. Today, delay in discharge process has emerged as one of the major problems. Discharge delays create an upstream tidal wave of patient flow constraints which negatively impacts patient satisfaction, safety, hospital capacity, and financial performance. Similar problems were faced at Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow. In this study we have taken discharge process as problem solving method to increase patient satisfaction. **OBJECTIVES:** To find out the main reasons for delay in discharge and thereafter recommend the remedial measures. **METHODOLOGY**: A prospective observational study through questionnaire based on interview was done in March- April, 2012. A sample size of 50 patients discharges were taken in the hospital. **OBSERVATIONS**: The time taken and various steps during the discharge were observed and discussed. It was observed that it took approximately 8 hours for patients to get complete discharge from the hospital. Main factors responsible for the delay were: HIS system directly affecting the billing (38.75 %), HRF (60 %), Internal transport (approx.2%). Further analysis of the HRF revealed that 70 % of delay was caused due to HIS and 30 % other reasons (less no of counters, less manpower, etc.). **CONCLUSION:** It was observed that the state of the art Hospital Information System which was initially developed with the hope of accelerating the hospital process has emerged as one of the major delaying factors in the discharge process. **RECOMMENDATIONS:** After discussion recommendations were made to improve the HIS in the hospital with more billing counters and increased manpower at each level to decrease the waiting time of patients.

CONTENTS

LIST OF FIGURES

FIGURE.15 Problems faced by the patients during discharge process

FIGURE.16 Problems faced by the doctors during discharge process

LIST OF APPENDICES

LIST OF ABBREVIATIONS:

HIS- Hospital Information System

HRF- Hospital Revolving Fund

O.R.- Operations Research

ALC- Average length of stay

OPD- Out patient Department

ICU- Intensive Care Unit

OT- Operation Theatre

SGPGIMS- Sanjay Gandhi Post Graduate Institute of Medical Sciences

INTRODUCTION

"Health care is characterized by fragmentation — among disciplines, among departments, among organizations, and among geographic locales — while those it serves depend on coordinated effort. The system propagates waste: waste of time, resources, and good will."

The typical hospital comprises many "islands of excellence," individual departments and providers across the healthcare continuum that work to meet or exceed patient care standards for their particular discipline.

Discharging patients from the hospital is a complex process that is fraught with challenges. Preventing avoidable rehospitalizations has the potential to profoundly improve both the quality-of-life for patients and the financial well-being of healthcare systems.

Discharge from the hospital is the point at which the patient leaves the hospital and either returns home or is transferred to another facility such as one for rehabilitation or to a nursing home. Discharge involves the medical instructions that the patient will need to fully recover. Discharge planning is a service that considers the patient's needs after the hospital stay, and may involve several different services such as visiting nursing care, physical therapy, and home blood drawing. The hospital discharge is a handoff, ripe embedded structural risks and hazards that can result in passive or active failures among "sharp end" providers. These failures can result in medical errors and an array of post discharge adverse events. There are now emerging data to suggest that post-discharge-related adverse events and re-hospitalizations can be reduced through interventions at the time of hospital discharge. The discharge process represents the final contact between the patient and the hospital health professionals, and the outcomes of all procedures undergone by the patient are recorded at this stage. Improving the quality of the discharge process should therefore lead to an increase in patient satisfaction. As a result patients are likely to return to a health centre where they have experienced an efficient discharge process when they next seek treatment. In turn, efficiency and productivity are increased at the hospital. The hospital discharge is poorly standardized and is characterized by discontinuity and fragmentation

of care conversely, available beds are a hospital's most important resource and the length of stay in hospital is an important factor in its efficiency. The unnecessary occupation of hospital beds and rooms and consequent low hospital bed turnover rate represent a waste in health care resources, and result in heavy associated organizational costs. A fast discharge process can ensure early availability of patient beds, which in turn, can reduce the waiting time of patient admissions or even reduce the incidence of patient rejection due to unavailability of beds.

Delayed discharges are particularly problematic because of their significant impact on hospital admissions and patient throughput. As a result of delayed discharges, bed control does not have enough bed options to meet incoming demand. Critical care units become challenged with moving patients into step-down areas, which then directly impacts inpatient admissions from the Emergency department. Perioperative services also experiences back-ups in the PACU, waiting for beds to become available.

In effect, discharge delays create an upstream tidal wave of patient flow constraints which negatively impacts patient satisfaction, safety, hospital capacity, and financial performance.

For many patients, the act of returning home following a period of hospitalization represents a pivotal event. Traditionally, the management of discharge from hospital has proved problematic; this is hardly surprising given the multiplicity

of processes and personnel involved. This situation is unlikely to have been made easier by the trend, evident in many countries, towards shorter, more intensive inpatient care. The challenge for those involved in discharge planning is to ensure that, however short the stay, each discharge is both timely and sensitive

Discharging a patient is an activity common to every hospital - small, large, community, inner-city, teaching or non-teaching. The discharge process can have an impact on numerous factors, such as patient satisfaction, bed availability, timely tests and procedures needed for discharge, home health equipment and service availability, social worker and therapist coordination, transportation, and nursing home arrangements. No matter what type of patient is

being discharged (maternity, medicine, orthopedic, neurologic) numerous activities must be completed for each before the patient can be released. This work toward discharge day should begin upon admission

REVIEW OF LITERATURE

Discharging a patient is an activity common to every hospital - small, large, community inner-city, teaching or non-teaching. The discharge process can have an impact on numerous factors, such as patient satisfaction, bed availability, timely tests and procedures needed for discharge, home health equipment and service availability, social worker and therapist coordination, transportation, and nursing home arrangements. No matter what type of patient is being discharged (maternity, medicine, orthopedic, neurologic) numerous activities must be completed for each before the patient can bereleased. This work toward discharge day should begin upon admission.

Discharge from the hospital is the point at which the patient leaves the hospital and either returns home or is transferred to another facility such as one for rehabilitation or to a nursing home. Discharge involves the medical instructions that the patient will need to fully recover. Discharge planning is a service that considers the pa tient's needs after the hospital stay, and may involve several different services such as visiting nursing care, physical therapy, and home blood drawing.

Nagaraju (2005) defines the *patient discharge process* as 'the final step of the treatment procedure during a patient's length of stay', and *timely discharge* as 'when the patient is discharged home or transferred to an appropriate level of care as soon as they are clinically stable and fit for discharge'.

Hospitalization is often a short-term event, so planning for discharge may begin shortly after admission. The physicians, nurses, and case managers involved in a patient's care are part of an assessment team that keeps in mind the patient's pre-admission level of functioning, and whether the patient will be able to return home following the current hospital admission. Information that could affect the discharge plan should be noted in the patient's medical record so that it will be taken into account when discharge is being scheduled. The primary questions include:

- Can this patient return to his or her preadmission situation?
- Has there been a change in the patient's ability to care for him- or herself?
- Is the patient in need of services to be able to care for him- or herself?

- Which services will the patient need?
- Are there mental health needs that must be met?
- Does the patient agree with the discharge plan?

The Discharge Planning Process:

Discharge planning is the process that healthcare professionals in hospitals use to facilitate patients' transition from one level of care to another. It most often applies when a patient transitions from an acute care setting to another level of care. The process of transitioning patients from one level to another occurs in all settings, including inpatient rehabilitation hospitals, skilled nursing facilities (SNFs), and home healthcare—anywhere patients receive healthcare.

Discharge planning is a process or a function. However, it is not a clinical specialty or assigned to a distinct profession. Its basis is the patient-centered aspects of healthcare, which include hospital-based services used to diagnose and treat illnesses, diseases, and accidents.

Discharge planning is a direct person-to-person function. Determining who should perform discharge planning or which profession should be the dominant one depends on the needs of the patient population a hospital serves. For example, a psychiatric service may employ more social workers, whereas an orthopedic service may employ more nurses

Healthcare professionals must be in direct contact with patients and their families to perform discharge planning in a patient-centric way. The primary purpose of the process is to evaluate a patient's capacity for self-care and continuing-care needs. The goal is to plan a course of action to meet patients' clinical, medical, nursing, psychosocial, therapeutic, supply, and pharmaceutical needs as they leave the acute care setting and move on to the next level of care

Being family-centered requires the process to be more than a medical diagnosis or a surgical` procedure. It must address the needs of the whole person. A healthcare professional uses methods of diagnosis, treatment, and education that address patients' physical, mental,

emotional, and spiritual well-being. Family-centered discharge planning also considers the social, cultural, ethnic, and financial aspects of healthcare. The term *family* in this context encompasses the nuclear family, extended family, adoptive family, significant others, or persons deemed part of the family by legal decision.

Healthcare professionals must be in direct contact with patients and their families to perform discharge planning in a patient-centric way. The primary purpose of the process is to evaluate a patient's capacity for self-care and continuing-care needs. The goal is to plan a course of action to meet patients' clinical, medical, nursing, psychosocial, therapeutic, supply, and pharmaceutical needs as they leave the acute care setting and move on to the next level of care.

Being family-centered requires the process to be more than a medical diagnosis or a surgical procedure. It must address the needs of the whole person. A healthcare professional uses methods of diagnosis, treatment, and education that address patients' physical, mental, emotional, and spiritual well-being. Family-centered discharge planning also considers the social, cultural, ethnic, and financial aspects of healthcare. The term *family* in this context encompasses the nuclear family, extended family, adoptive family, significant others, or persons deemed part of the family by legal decision.

Discharge planning is also transitional—that is, it is focused on transitioning the patient to the next level of care. Comparing discharge planning to case management illustrates why the term *transitional* is used. Many healthcare professionals who perform discharge planning have the title of case manager or care coordinator, which implies that their job functions involve more than discharge planning. They suggest a broader expectation that can include utilization review, following patients through discharge, managing disease, and performing other functions. Discharge planning is a legally mandated function, however, so case managers— or whoever is assigned discharge responsibilities—must understand the transitional nature of discharge planning. This understanding helps ensure regulatory compliance and provides a service that will improve the patient's outcome.

Discharge planning is critical to ensuring rapid, safe and smooth transition

from hospital to another care environment; it involves the social work functions of high risk screening, social work assessment, counselling, locating and arranging resources, consultation/collaboration, patient and family education, patient advocacy and chart documentation; it is a complex activity requiring a wide range of clinical and organizational skills to address needs of patient, family and health care system and to promote the optimum functioning of patients, families and support systems. Delay factors may be internal (waiting for discharge summaries; waiting for declaration of chronicity; transfer between nursing units; lack of documentation of discharge plan); external (lack/delay of access to rehabilitation, convalescence, palliative care, home care resources, long term care facility); and psychosocial (waiting for family adjustment to illness, waiting for patient function to improve, unrealistic expectations of patient/family, social isolation of patient, inadequate support at home, lack of concrete medical aids, transportation for treatments, financial, family burden prevents discharge home).

*"**A** 'Discharge Plan' must be prepared for each patient at the time of hospital discharge, and a concise discharge summary must be prepared for and relayed to the clinical caregiver accepting responsibility for post discharge care in a timely manner. Organizations must ensure that there is confirmation of receipt of the discharge information by the independent licensed practitioner who will assume the responsibility for care after discharge.(2)*

VARIOUS STEPS INVOLVED IN THE DISCHARGE PROCESS IN THE HOSPITAL

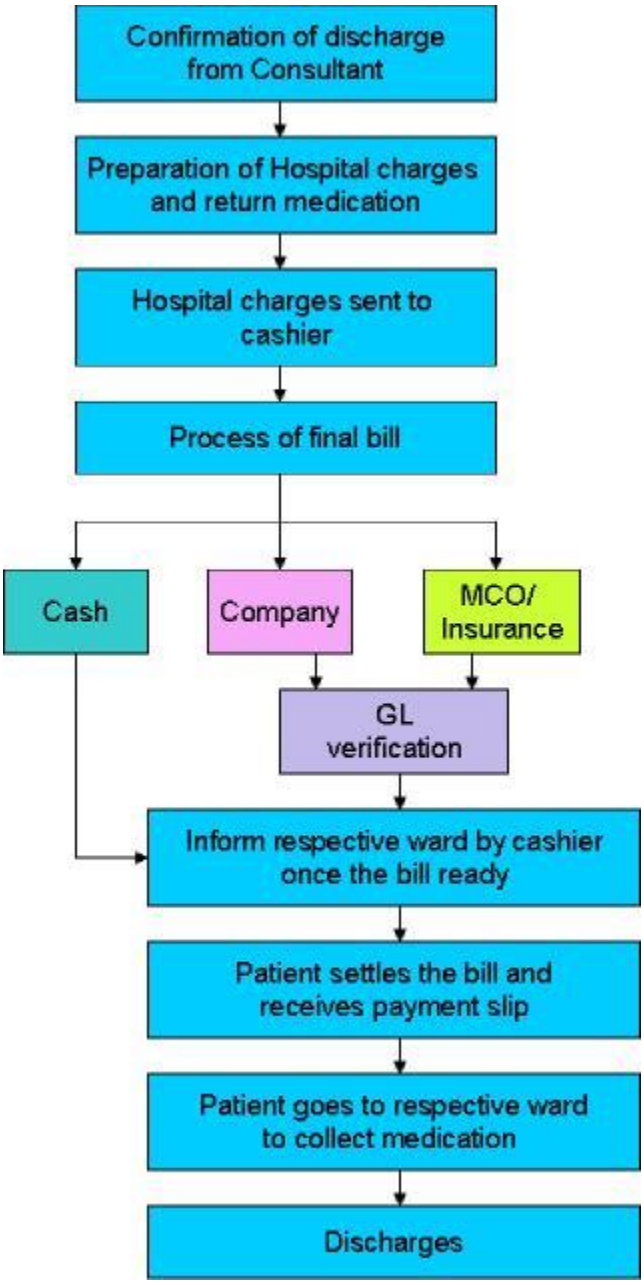


Fig.1 Flowchart representing various steps involved in the Hospital Discharge Process

There are intended to be basic principles applying to discharge from hospital. Unfortunately they are frequently disregarded. Discharge is only meant to happen when:

i) Key decisions have been made about the provision of any care needed and the source o that care agreed.

ii) Funding of all required resources or accommodation after discharge has been established.

Discharge from hospital should be planned and arranged by a team which will include, or have links with, Social Services and Health (the PCT). There may be a specific member of Hospital staff acting as a Discharge Facilitator (or co-ordinator).

'The Patients Charter' provides for you and your carer(s) to be consulted at all stages regarding any arrangements made for you. However, there is intense pressure on hospital beds and hospital discharge may not always be properly organised. If you are funding and arranging your own post-hospital care, the pressure may be particularly acute.

Increase patient satisfaction by improving discharge process

As patient satisfaction surveys become a key measure of quality of care, one major concern for hospitalists is how reducing length of stay (LOS) affects overall patient satisfaction.

Four elements important to patient satisfaction:

Clark says Press Ganey research has determined that four elements of the discharge process measure patient satisfaction with the process.

The following four elements also strongly correlate with overall patient satisfaction regarding the hospital's discharge:

- **Patient's personal readiness**—Do the patient and family feel that they have the appropriate understanding, confidence, and capacity to leave the hospital?

- **Speed**—Is the process of getting the patient home or to another care setting efficient?
- **Instruction**—Do the patients and family know what to do after the patient is discharged?
- **Coordination of arrangements**—How well were arrangements made and communicated for accessing home care services, medical equipment, rehabilitation care, and other postdischarge health services?

In the recently published HCPro report *Patient Satisfaction and the Discharge Process,* Clark recommends taking the following steps to implement scheduled discharge times:

- Establish appointment slots for each day based on the average number of patients discharged from a unit per day
- Adjust the number of slots based on the day of the week and the unit (e.g., internal medicine units may have fewer slots on Saturday and Sunday, but critical care may have more slots)
- Assign slots as soon as possible, but at least 24 hours in advance; elective surgery patients can be assigned a discharge time at preadmission
- Display a schedule of all discharges at the nurses' and physicians' workstations
- Schedule only one patient per slot
- Schedule transfers exactly as you would schedule discharges
- Track the percentage of patients discharged within 30 minutes of their discharge appointment time

AIM:

To study holistically the various aspects of the discharge procedure in SGPGIMS, Lucknow

OBJECTIVES:

1) To study the different steps of discharge, from the moment the discharge order is written to the final discharge.
2) To study the time taken between discharge order and the final discharge
3) To observe different types of bottle necks such as problems faced by the Relatives of the patients, Health Care Providers etc.
4) To identify the steps which can reduce the bottle necks
5) To make recommendations for streamlining the discharge procedure.

METHODOLOGY:

- A prospective observation based study, through questionnaire based interview was performed in the month of March- April, 2012 in Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow(U.P.)
- The study was carried out in mainly five Departmental wards of the hospital:
  Neurology, Gastro- surgery, Nephrology, Urology and Cardiology.
- Pilot study of around 15 people (Doctors, Nurses, Patients) was performed in order to enquire about the various problems faced during the discharge
- A sample size of 90 (30 Patients, 30 Nurses and 30 Senior Residents) was taken to carry out the present study
- To perform this study, three different questionnaires were designed (one each for Senior Residents, Nurses, Doctors). The questionnaires identified the viewpoints and the attitudes of the hospital personnel and the patients regarding the factors effective in the discharge process, as well as their ideas on how to improve the discharge process in SGPGIMS and reduce the discharge process time.
- For time measurement, patients were tracked by patient number and were selected after doctors had ordered their Discharge.
- The patients were followed throughout the process to measure their waiting time in each station.
- The average waiting time was calculated for each ward in the whole discharge process.
- The phases of discharge process were determined by interviewing the staff.
- Various O.R. methods were used to do the final analysis of the collected and the available data.

OBSERVATIONS:

INSTITUTE AT A GLANCE

Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, U.P

Since the time of independence, the state of Uttar Pradesh had been considering the idea of establishing a Post-Graduate medical institute, an institution of higher education in the field of medicine at Lucknow in accordance with the recommendation of the Bhore committee. The claim of Lucknow. For this distinction was based on the location of the KGMC, one of the finest medical schools of North India, in the city. Finally the idea was fulfilled and on December 14, 1980 foundation stone of Sanjay Gandhi Post-Graduate Institute of Medical Sciences was laid on the campus of King George Medical College (KGMC) BY THEN President of India, Sri Neelam Sanjeeva Reddy. Unfortunately, the institute got shrouded in controversy soon thereafter. It thus set up a fact finding team which visited leading medical centers in USA and UK. Considerable debate followed this committees report and finally led to a decision to start a new Post Graduate institute and thus, **Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, U.P** came into existence.

In 1983, the government of UP created the autonomous institute by an act of the state legislature, the object being to create a center of excellence for providing facilities for medical care, education and research in the field of medical sciences in the existing super specialties, and I empowered to grant its own degrees, diploma and other academic awards.

The Institute has been extremely fortunate in receiving a grant aid from the GOVERNMENT OF JAPAN with help from Central Government of India, for it equipment needs. A long term technical cooperation program was forged between ***SGPGIMS*** and ***NAGOYA UNIVERSITY SCHOOL OF MEDICINE*** under the aegis of Japan International Cooperation Agency (JICA) , to foster technology transfer and research collaboration. It is a matter of pride for the State of UP that SGPGIMS has been able to create a niche for itself at the national level. In spite of the resource constraint the state is committed to fill development of the project and is looking into the possibility of mobilizing external resources for the project.

Concept:

To provide state of art medical care to the people of the state and provide contemporary medical education and training, so the high quality medical care can be disseminated to remote areas of the state and to other parts of the country. To put this concept into practice, the working group adopted the motto of clinical center of the National Institute of Health, Bethesda, U.S.A. which reads somewhat as follows-*hospital with a long tradition of excellence have demonstrated abundantly that research enhances th*e *vitality of teaching, which lifts the standard of services and which in turn opens new avenues of investigation.* This motto effectively sums up the interaction between patient care, teaching and research- the tripped of higher education-in the field of medicine

The Act:

The institute was created in 1982 by an ordinance as an autonomous body corporate to fraction as university; this ordinance was replaced by the SGPGIMS act which was passed by the state legislature 1983. The act is modeled on the AJIMS Act of the government of India.

Objectives:

- To create a center of excellence for providing medical care, education and research facilities of high order in the field of medical sciences in the existing super specialties and such others as may emerge in future, including continuing medical education.
- To develop patterns of teaching in Post Graduate medical in super specialties, so as to set a high standard of medical education.
- To provide for training in paramedical and allied fields particularly in relation to super specialties.
- Function as a referral hospital.
- Provide for Post Graduate teaching and conduct research in the relevant discipline of modern medicine and other allied sciences including inter-disciplinary fields of physical and biological services.
- Conduct experiments in new methods of medical education, in order to arrive at satisfactory standards of such education.
- Prescribe courses and curriculum for Post Graduate studies.
- Hold examinations and grant such degrees, diploma and other academic distinction and titles in Post Graduate medical education as may be laid down in the regulation.
- Cooperate with other institution in conduct of research and higher education in medical field.

ADMINISTRATIVE SETUP

The act has made specific provision in respect of the officers of the Institute. However, for carrying out the business of the Institute, the Director is associated by the Additional Director and Joint Director (Administrator) in respect of administrative matters, the Dean for academic matters, the Finance Officer for Finance matter, the Joint Director for material management, the Consultant (Technical engineering) and Chief Engineer for engineering matters(civil, electrical and biomedical) and the Medical Superintendent in respect of hospital matters. The institute comprises of different specialty department, the senior most faculty members of the department being the head of the department. The Executive Registrar carries out examination and other related tasks.

OFFICERS OF THE INSTITUTE

The senior most officer of the Institute is The Governor of the State ,an ex-officio visitor of the Institute. The Chief Secretary to the government of UP is the President and the Chairman of its governing body. He is also appointing authority for the faculty and officers of the Institute. The Director of the Institute is the Vice Chairman of the governing body, the Chief executive and academic officer of the Institute. He is appointed by the committee consisting of:

- President of the Institute
- A judge of the High Court at Allahabad nominated by the Chief Justice
- One person is nominated by the visitor who acts as convener of the committee
- 2 medical experts nominated by the visitor

The dean of the institute is appointed by the governing body from amongst the professors of the institute. He is the member secretary of the academic board. The finance officer of the institute is appointed by the state government. The executive registrar of the institute serves as a secretary of the institute and its governing body.

REGULAR STAFF

- Faculty 160
- Senior resident 250
- Nurses 750
- Technicians 200
- Officers 70
- Other employees 700

DEGREE/CERTIFICATE OFFERED

- DM – In relevant specialties
- M.Ch -- in relevant specialties
- MD -- in relevant specialties
- PDCC -- in relevant specialties
- Post doctoral Certificate Course
- Ph.D -- in relevant specialties
- PDCC (Post Doctoral Certificate Course)
- PNCC
- Diploma in Hospital Administration
- Diploma in nursing informatics
- Diploma in hospital information system
- Diploma in telemedicine
- Diploma in public health information system
- Diploma in library information system

MAIN HOSPITAL

- The SGPGIMS is located on a 550 acre residential campus at the Raebareli Road on Lucknow – Varanasi Highway, about 15km from the 5th main city center. The campus is self contained with provisions for accommodation, community centre, school, post office, bank etc. to protect the institute from dust and noise pollution and to maintain a clear and healthy environment, necessary for a hospital, extensive landscaping in the form in the form of a forestation, parks, lawns, etc had been planned and has been properly executed with the Social Forestry Department of the State Government and with the Help of a private landscaping consultant 70 feet wide road parallel to the 26 feet road in front of main OPD along with two connecting road is now being made. This will facilitate in reducing the crowd and by ensuring smooth traffic movement.
- The total covered area of the main hospital and its auxiliary is approx 40000 sqmts. The hospital has 686 beds of different specialties including 54 Intensive Care unit beds and 15 General Hospital beds and 45 floating beds. It has 14 well equipped operation rooms. 67 OPD's of different specialties are being run every week.
- There are 6 OPD bays(one for each center) with an attached waiting area. For ambulatory care, the hospital has a provision for day care ward with three endoscopy units and two operations rooms for minor surgical, investigate and interventional procedures. Advanced pediatric center (40 beds) is under construction and will be completed within next six months.
- The main hospital has two 10 storied towers. Each floor has 60 beds including 12 private rooms, 4 isolation rooms, 8 semi intensive beds and 36 general beds. The main hospital is totally air conditioned. There are two standby generators of 3000 ICUA to provide backup in case of disruption of power supply. The hospital is equipped with all ancillary facilitates necessary for its smooth functioning viz kitchen, CSSD laundry incinerator etc.

- Modern medical care is expensive and the state cannot afford to provide free medical care to all. The institute after careful consideration opted to charge the patients for its services at rates which are subsized and considered reasonable. The institute at present generates about one-fourth of its total revenue of its- total revenue expenditure and its manner.
- Even though the institute has already made some impact, it still has a long way to go. It has to strive to attain greater heights using the existing base as a launching pad. To achieve this, the hospital has to keep its position intact to reach the goals set by the founders of the institute.

- The six super specialties which have been started in the first phase are:

1. Neuro Sciences (Medical & surgical)
2. Cardiac sciences (Medical & surgical)
3. Renal sciences (Medical & surgical)
4. Gastroenterology (Medical & Surgical)
5. Endocrinology (medical & surgical)
6. Genetics and immunology (medical & surgical)

Latest inclusion

7. Critical care medicine
8. Hematology
9. Department of hospital administration

- Each specialty is being developed as a comprehensive centre combining medical surgical and basic sciences disciplines. In addition, there are departments of Pathology, Microbiology and Radio diagnosis, Nuclear Medicine, Radiotherapy and transfusion medicine to provide necessary support to all the specialties.

To the best of my knowledge the SGPGIMS LKO is the first and the only government medical institute (at present) in India having fully developed computerized HIS system. All functions are governed. BY COMPUTERISED HIS system. The hospital administration played a great role of coordination to achieve it.

Specialty wise bed strength in the SGPGI Hospital As on 30-06-2009

Table – 1

S. No.	Main ward Block area	Name of the Specialty/Ward	No. of Beds Activated
1	GF-I	Medical Endocrinology	30
2	II	Surgical Endocrinology	28

3	IV	Nuclear Medicine	04
4	G-1st	Cardiology	30
5	G-2nd	C.V.T.S.	30
6	G-2nd	Radiotherapy	14
7	G-2nd	Genetics	20
8	G-3rd	Nephrology	60
9	G-4th	Urology	60
10	G-5th	Medical Gastroenterology	60
11	G-6th	Surgical Gastroenterology	60
12	G-7th	Neurology	62
13	G-8th	Neuro-Surgery	60
14	G-9th	Immunology	27
15	G-9th	Hematology	27
16	Other areas	Paediatric Gastroenterology	22
		Paediatric Ward	24
		Medical Gastroenterology -ERS	02
		Radio diagnosis - ERS	02

		Nephrology - ERS	05
		General Hospital	25
		Sub total	**652**

S. No.	**Name of the Specialty/Ward**	**No. of Beds**
	ICU/HDU	
1	MICU	22
2	Critical Care Medicine	19
3	C.V.T.S. I.C.U.	14
4	K.T.U.	13
5	Neuro-Surgery post op & ICU	13
6	BMT	08
7	Ped. Gastro ICU	04
8	Ped. Gastro HDU	03
9	Liver Transplant	12
	Sub Total	**108**

	Beds for floating patients	
1	Emergency Services	11
2	Hemo-Dialysis	26
3	Peritoneal dialysis	08
4	C.A.P.D	04
5	Post Op. Unit	15
6	Pre OP Unit	08
7	Emergency Ward/Plastic Surgery ward	16
8	Day Care Ward/Pulmonary ward	10
9	Radiotherapy Day Care Ward	10
	Sub Total	**108**
	Grand Total	**868**

Operation Theaters

Table – 2

S. No.	Specialty	No. of OTs
01.	Urology	03
02.	Surgical Gastroenterology	03
03.	C.V.T.S.	02
04.	Endocrine Surgery	01
05	ENT.	01
06.	Neurosurgery	04
07.	General Hospital	03
	Total	**17**

Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow

Hospital Statistics

Table – 3

COMPARATIVE STATEMENT OF STATISTICS FROM

01st January 2005 to 31st Dec. 2011

	1	2	3	4	5	6	7
	1st Jan 2005 to 31st Dec 2005	1st Jan 2006 to 31st Dec 2006	1st Jan 2007 to 31st Dec 2007	1st Jan 2008 to 31st Dec 2008	1st Jan 2009 to 31st Dec 2009	1st Jan 2010 to 31st Dec 2010	1st Jan 2011 To 31st Dec 2011
New Registration	43530	46566	52521	58894	65547	71335	76620
Follow up patients	132415	146355	168831	183687	204095	243027	284062
Discharge	35190	36732	38994	40596	29259	33705	34762
Bed Occupancy Rate	69.5%	68%	74.4%	76.1%	78.6%	74.4%	76.1%
Surgery	6213	6296	7331	7680	7353	7724	8202
Renal Transplant	97	113	115	115	92	100	114
Liver Transplant	NIL	3	1	0	NIL	NIL	NIL
Bone Marrow Transplant	04	4	1	0	2	2	NIL
Lithotripsy	21 *	326	295	125	NIL	130	329

Open Heart Surgery	433	519	474	478	465	382	402
M. R. I	4664	5496	5984	6392	6395	8709	8286
Hemodialysis	8342	10483	12555	16097	14966	17433	18495
Peritonial Dialysis	417	354	156	57	32	15	28
Investigations	1277982	1426779	1587304	1658143	2051488	2282945	2385210
Endoscopic Procedures	8042	9452	10723	12588	13277	13642	13546
Coronary Angiography	2004	2333	2396	2520	2712	2433	2193
PTCA	922	1056	1081	1196	1407	1352	1250
Histo-pathology	7208	7718	9044	9506	9878	10392	11473
CT Scan	3164	4253	4843	5889	7293	9138	10960
Ultra Sound	14322	18037	21049	21358	16810	20315	20694
Blood Donation	16768	17577	18995	21404	21541	22025	22486
ERS Patients	10853	11011	12476	12985	13417	122114	11505
Hosp. revenue Collection April – March (Financial year)	Jan-Dec. 2005 Rs. 207147959	Jan-Dec. 2006 Rs. 22626023 8	Jan-Dec. 2007 Rs. 262842359	Jan-Dec. 2008 Rs. 27825181 5	Jan-Dec. 2009 Rs. 31529109 1		

* Lithotripsy facility is not available since July 2004. The new machine on lease contract is being installed.

** Due to renovation work of the area, less number of dialysis could be done.

VARIOUS STEPS IN DISCHARGE PROCESS:

Discharge Summary made by the doctors

Patient file arranged and summed up

Unused medicines of patients returned back in HRF and amount Deducted from bill

Patient's name removed (name out) and\ Bill statement taken out

Bill statement handed over to patient

Bill clearance by the patients and handing over the signed no- dues Form to the patient

Submission of one copy of the no-dues certificate at the nursing Station

Handing over the discharge summary to the patient

Next Day patient's file sent to MRD

- The findings showed that doctors visited most of their patients between 10-11 a.m. and they issued the discharge order during this period.
- In this hospital the discharge process began with the issue of the discharge order by the Senior Residents (in some departments like neurology, Consultants)
- Discharge summary is made by the Senior Residents and handed over to the nursing staff and the Patients name is removed from the computer.
- Meanwhile If any unused medicines or other things are left with the patients, they are sent back to the HRF for returning and the money is deducted from the patient'ts bill
- The Statement off bill is given to the patient for Clearance of the bill.

  Patient goes to the accounts section for clearance of the bill.
- Once the final bill is cleared, then two duly signed no-dues forms are provided to them from the accounts section.
- Patient returns back to the nursing station and submit one of the no-dues forms there and keep the other form with him.
- Finally, the discharge summary is handed to the patient and the patient is allowed to go…

Total time taken in the Discharge Process

In order to find total time taken , by the patients in the discharge process, 30 patient discharges in the period of March-April 2012 were followed in SGPGIMS . The patients were also made to fill some questionnaires by interviewing.

On the basis of these the average time calculated was based on the major factors causing delay in Discharge. The factors were:

- ✓ Total time taken in HRF
- ✓ Total time taken in the accounts section for billing
- ✓ Total waiting time for internal transport (wheelchairs, stretchers etc.)

On further analysis,it was found that:

- ✓ Average time taken in HRF : 4.8 hours
  (Time range varies from 4 hrs to 10 hours)
- ✓ Average time taken in Billing (accounts): 3.1 hours
  (Time range varies from 2hours to 6 hours)
- ✓ Average waiting time in waiting for Internal Transport: 0.7 hours
  (Time Range varies from 1hour to 2 hours)

From the above data :

The average time taken in the total discharge process is 8.6 hours (approximately)

	HRF (hr)		ACCOUNTS		INT.TRANS	TOTAL
Average	4.8		3.1		0.7	8.6

Median	5.0		3.5		1.0	9.0
MODE	5.0		3.5		1.0	9.0
Standard Deviation	1.7		1.4		0.6	3.7

Graphs representing Measure of Central Tendency from the given data :

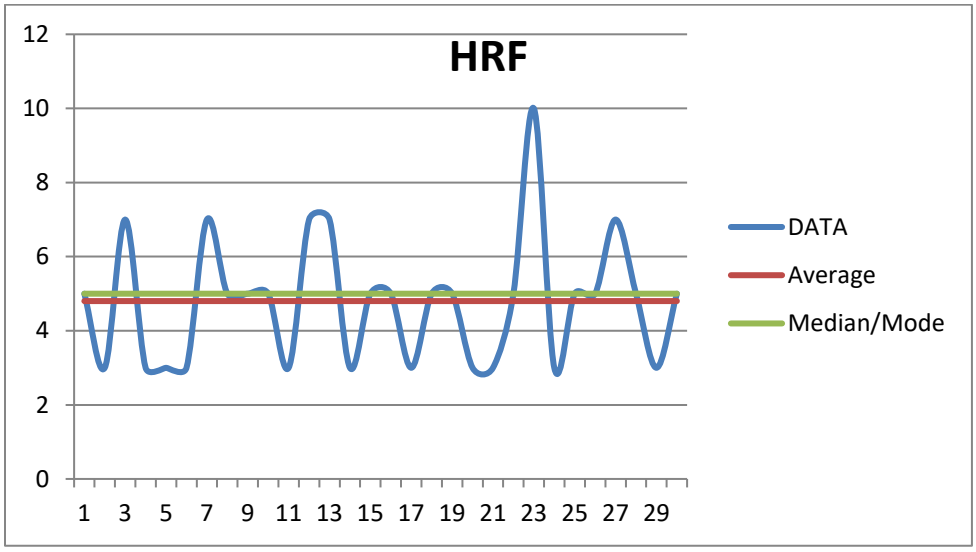


Fig.2 The above Graph depicts Average Delay in HRF i.e.4.8 hours and a standard deviation of 1.7 hours

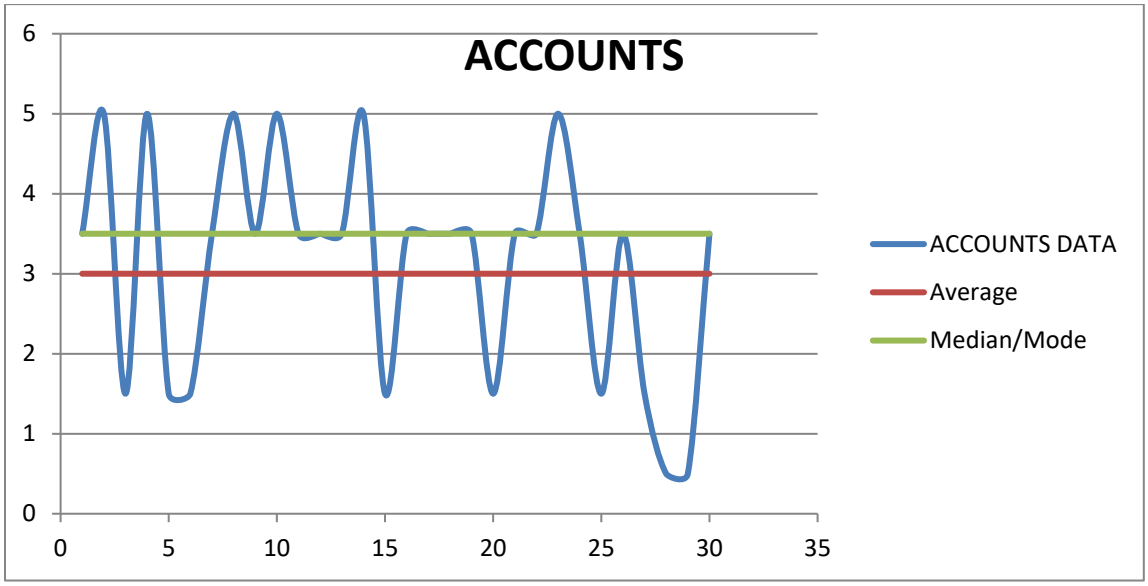


Fig.3 The above Graph depicts the delay in the accounts section i.e. 3.1 hours and a standard deviation of 1.4 hours

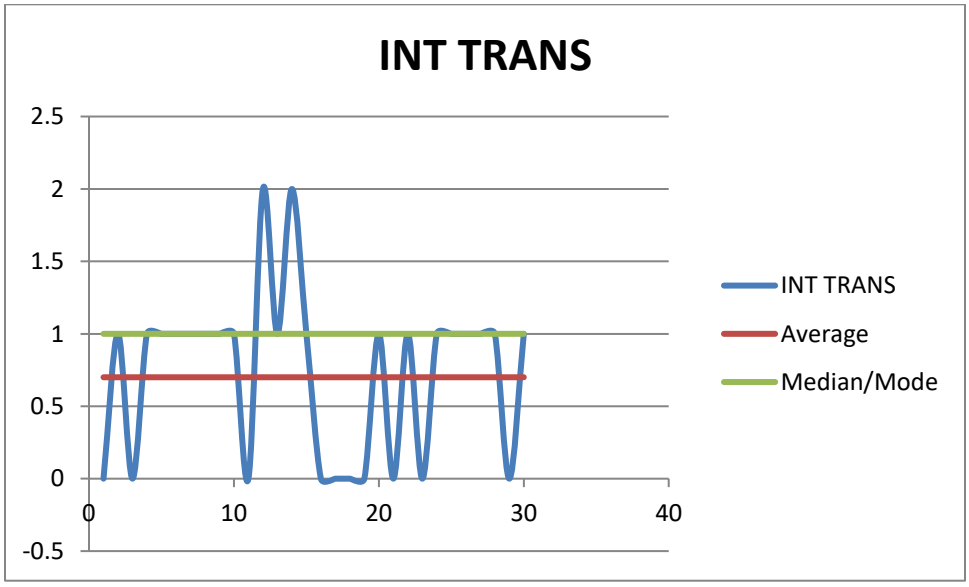


Fig.4 The above graph depicts average delay in Internal Transport i.e 0.7 hours and standard deviation of 3.7 hours

VARIOUS PROBLEMS FACED DURING THE DISCHARGE PROCESS:

Hospital discharge process is one of the most vital functions which plays an important role in hospital functioning and increasing patient's satisfaction.

However several problems are faced during the discharge process , which in turn causes delay in the total Discharge process.

In this study, several factos which are responsible for Delay in patient discharge process were found (with the help of questionnaires and interviews)

Problems faced by Nursing staff during Discharge process, which causes delay in the process are:

The personnel's opinion about factors affecting waiting time in the discharge process, based on their importance from most to least, is as follows:

- In appropriate Hospital Information Systems
- Delay from HRF Department in refunding the bill by deducting the unused materials(medicines) by the patient.
- Less Manpower available in the Departments (same personnel are involved in multiple tasks).
- Availability of less number of Internal transport facilities
- Doctors do not visit patients on time.
- Delay by Senior Residents in completing the documentation summary sheet (Discharge Summary) in the medical record
- Information given by the doctors about patient's discharge mostly at the last minute.
- Absence of guidelines for personnel involved in the discharge process.

Problems faced by the Senior Residents during Discharge process, which causes delay in the Process are:

- According to Senior Residents the major factors causing hindrance in the discharge process and hence causing Delay are:
- In appropriate Hospital Information system
- Lack of Time (As Involved in multiple tasks)
- Less manpower (nurses, doctors, and others)
- Less Facilities available(especially less number of computers in the Departments)
- Problems faced in convincing patients who are reluctant not to leave hospitals before complete healing
- Less co-ordination among staff.

Problems faced by the Patients during discharge process, which causes delay in the process are:

- Long waiting queue at the billing counter
- Increased waiting time while receiving refund from the HRF Department
- Long waiting time for Internal Transport facilities (e.g. wheelchairs etc.) during discharge .
- Information regarding discharge not given in advance
- Less frequent visits of the doctors
- Left unattended and had to wait long for the personnel to solve any queries regarding discharge.

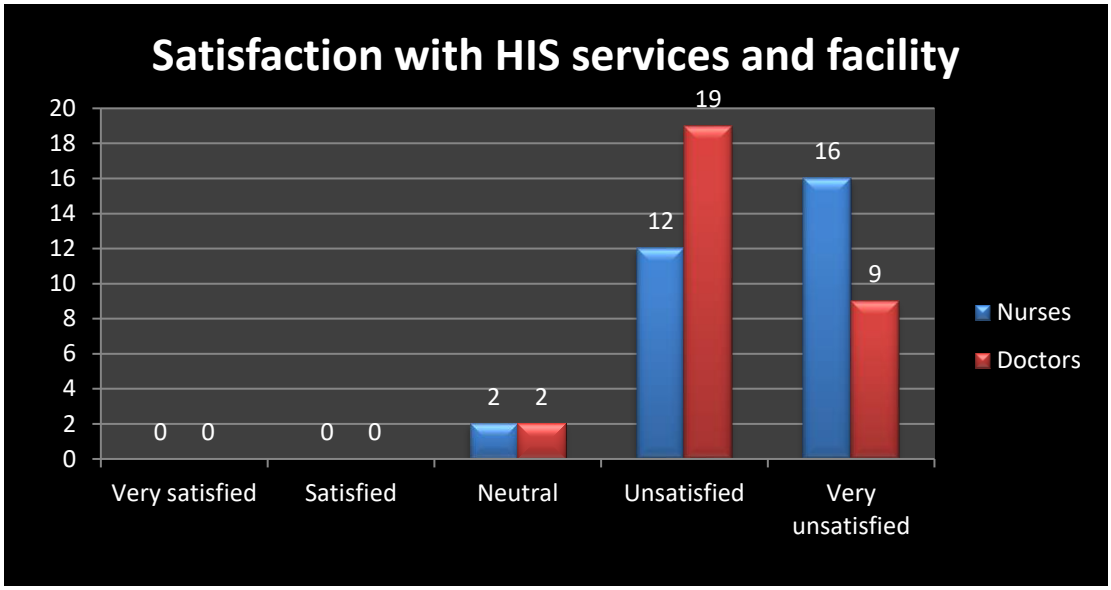


Fig.5 Satisfaction with HIS services

HIS was installed with an aim to streamline and automate the routine procedures of the hospital. It was found that 63% of the doctors and 40% of the nursing staff were not satisfied with this facility. 30% of the doctors and 53% of the nursing staff were thoroughly disappointed with this facility..

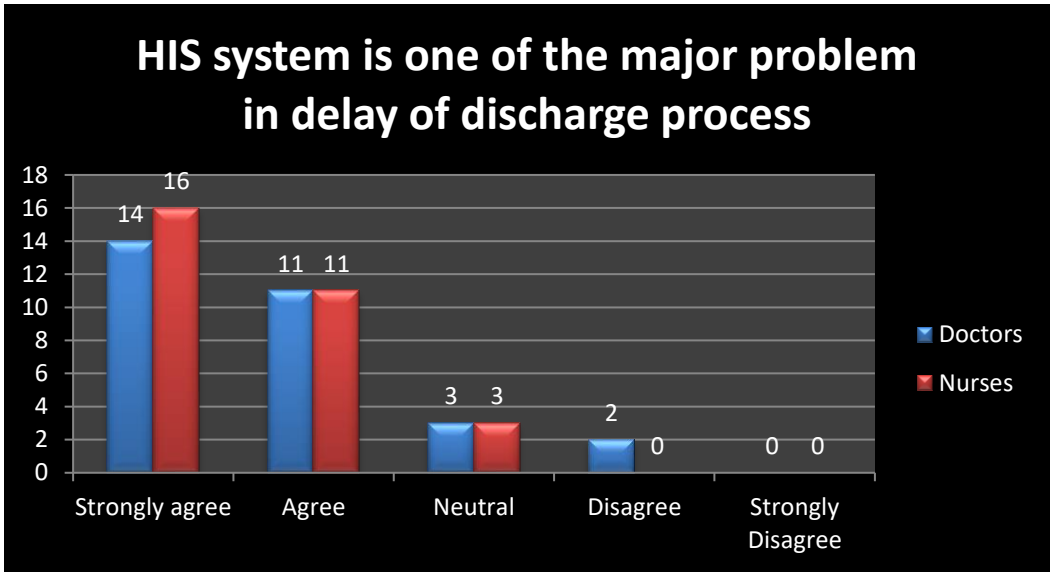


Fig.6 Represents HIS as major cause for delay

47% of the doctors and 53% of the nursing staff are convinced that HIS is the major player causing substantial delay in the discharge procedure. 37% of the doctors and nursing staff were of the view that HIS could well be a potent cause of delay in the discharge of the patients from hospital.

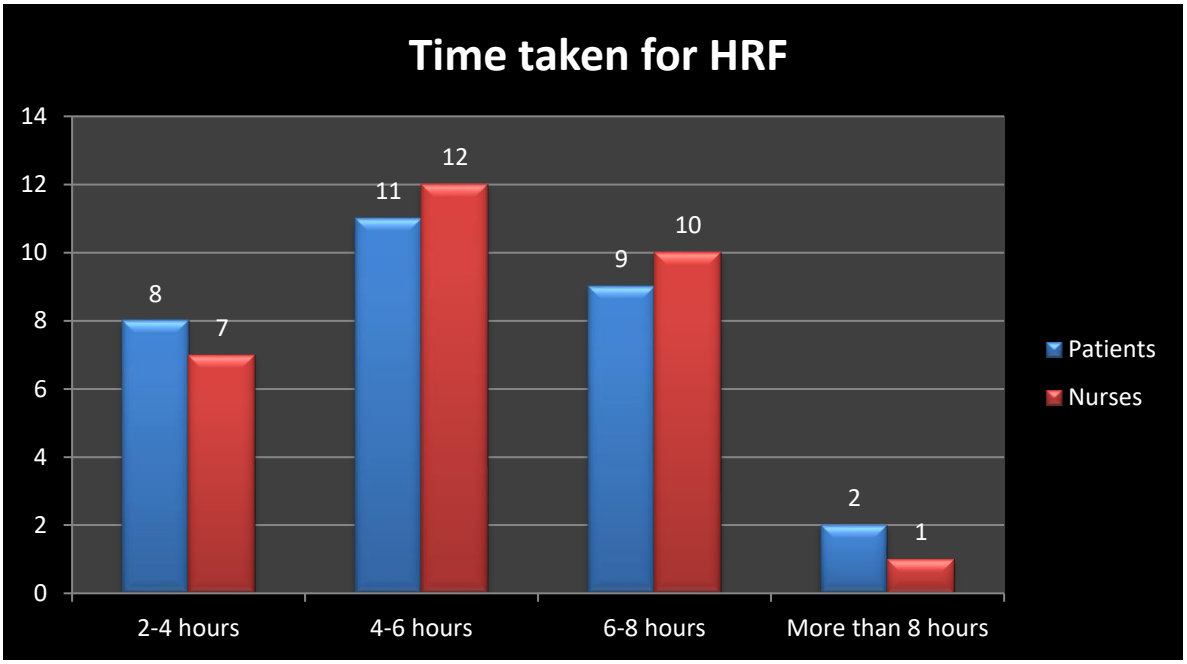


Fig. 7 Total time taken in HRF

The study reveals that about 37% of the patients and 40% of the nursing staff are of the view that HRF process takes 4-6 hours whereas around 30% of the patient and nursing staff were of the opinion that HRF process consumes up to 6-8hours. Around 24% patients and nursing staff acknowledged a delay of 2-4 hours in HRF process.

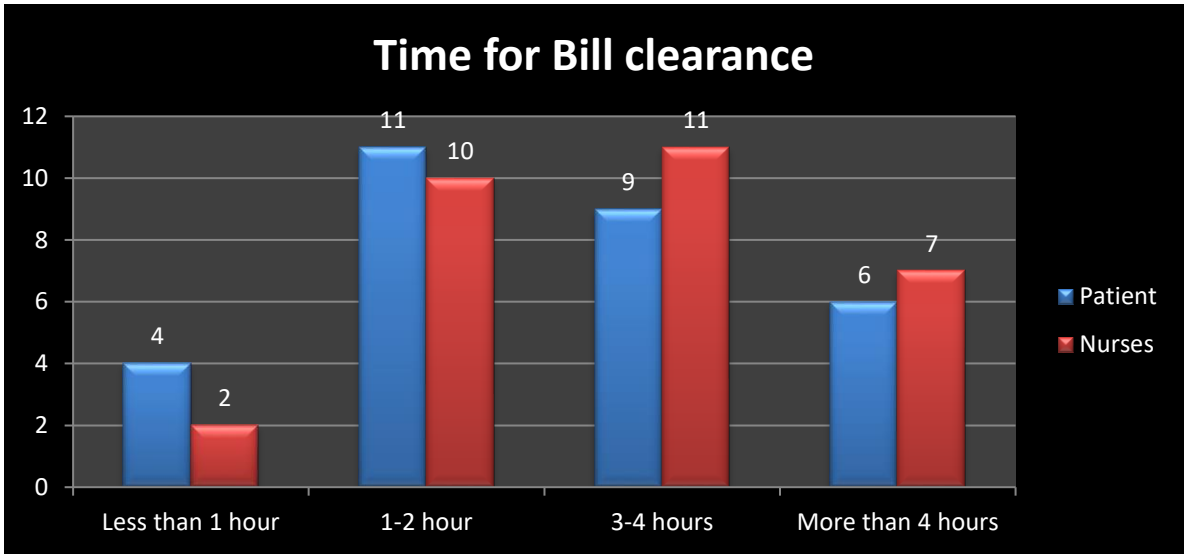


Fig.8 time taken in bill clearance

The study shows 37% patients and 33% of the nursing staff claimed that clearance of bill can take up to 2 hours, however 30% of the patients and 37% of nursing staff were of the opinion that clearance of bill may take up to 4 hours. 20% of the patients also claimed that settlement of bills took more than 4 hours the fact was acknowledged by 23% of the nursing staff.

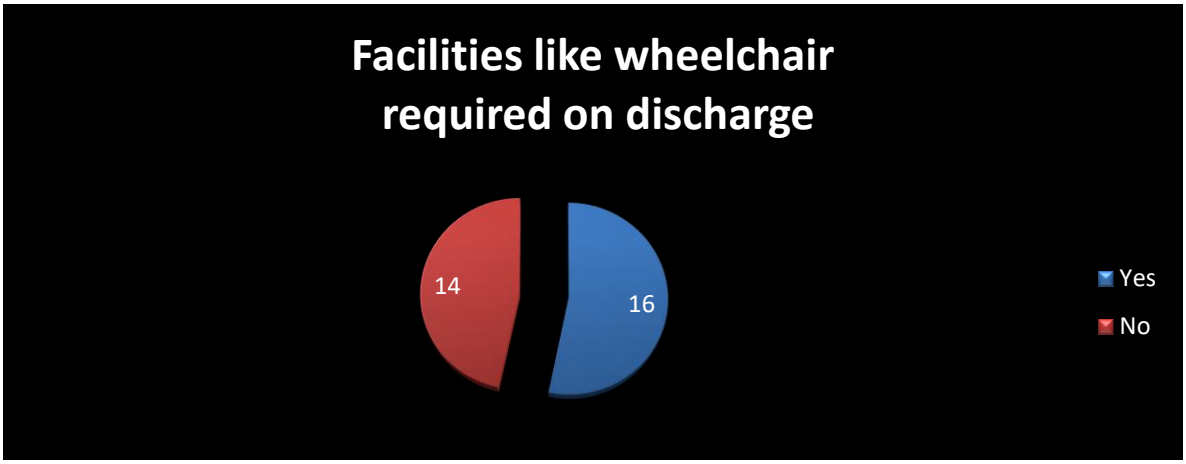


Fig.9 Requirement of facilities from Internal transport

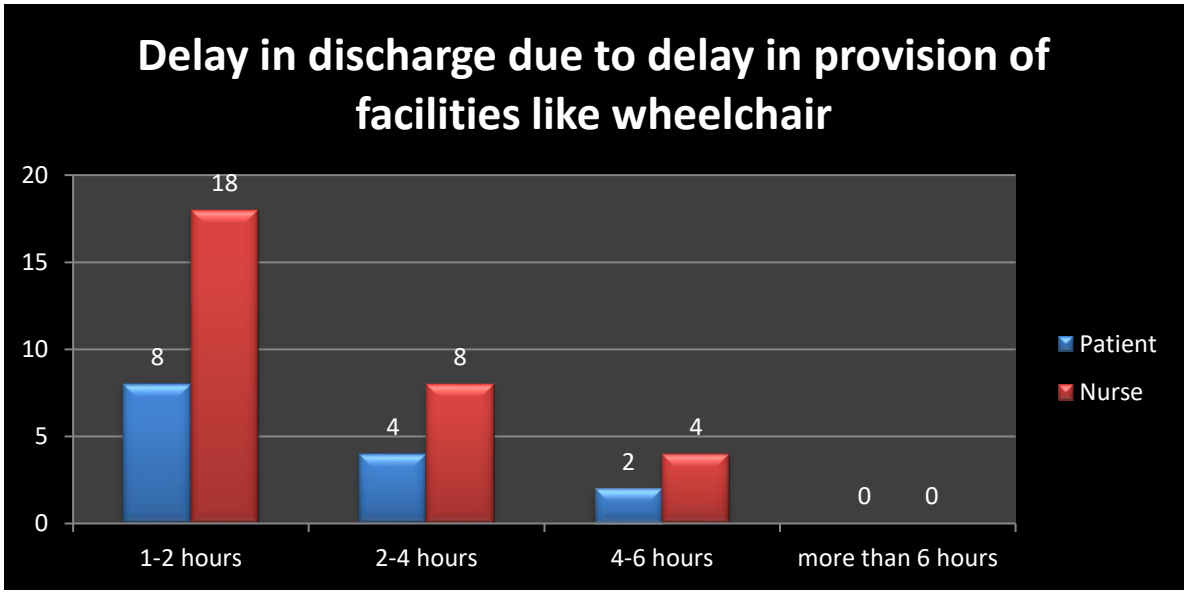


Fig.10 Delay caused due to Internal transport facilities

The study reveals that about 57% of the patients and 60% of the nursing staff attributed the delay of 1-2 hours in discharge procedures due to non-availabity of facilities like wheel chair, 28% patients and 27% of the nursing staff claimed the delay upto 2-4 hours.

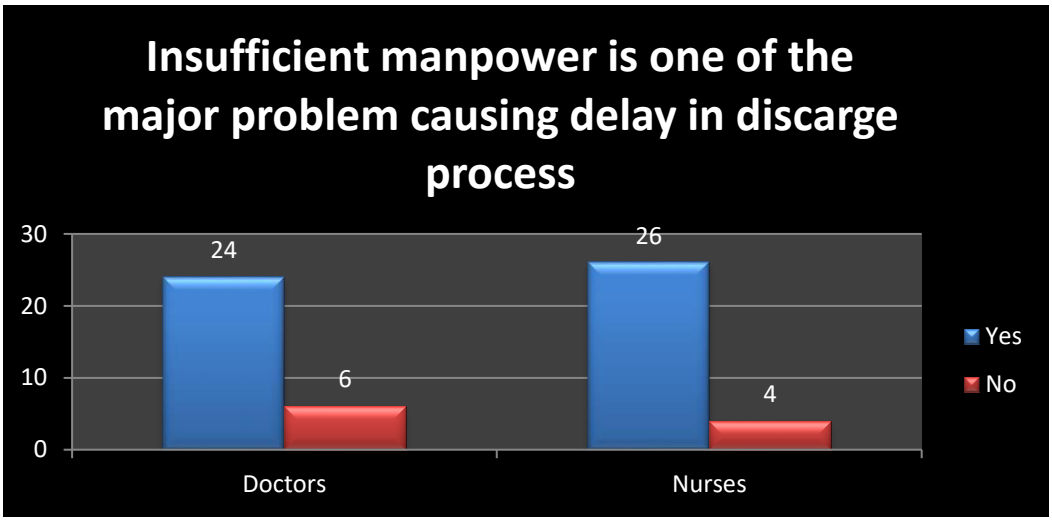


Fig. 11 Graph showing insufficient manpower

80% of the doctors and 87% of the nursing staff are opinion that insufficient manpower in various departments is one of the primary reasons of delay in discharging the patients.

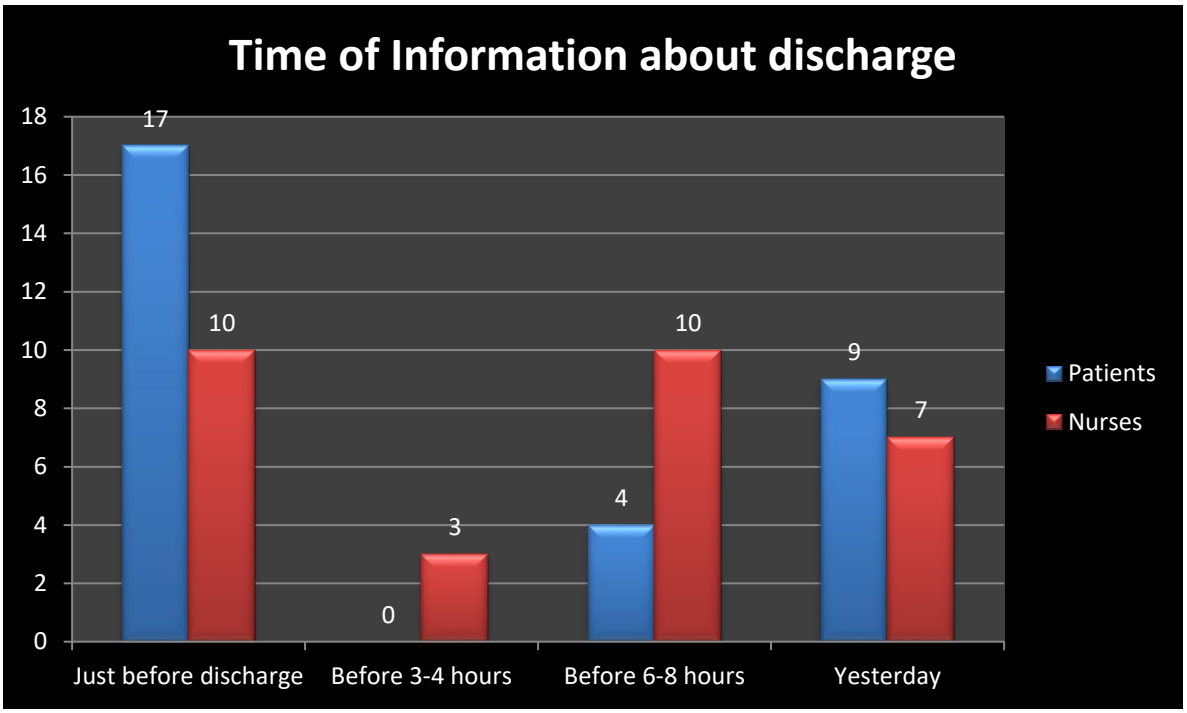


Fig.12 Information about discharge

The study reveals that about 56.7% of the patients were informed about their Discharge. Order at the last minute. The fact is corroborated by 33% of the nursing Staff. About 13% of the patients and 33% of the nursing staff agree that intimation about discharge was provided 6-8 hours prior whereas 30 % patients and 23% of the nursing staff were affirmative that they had knowledge of the discharge a day prior.

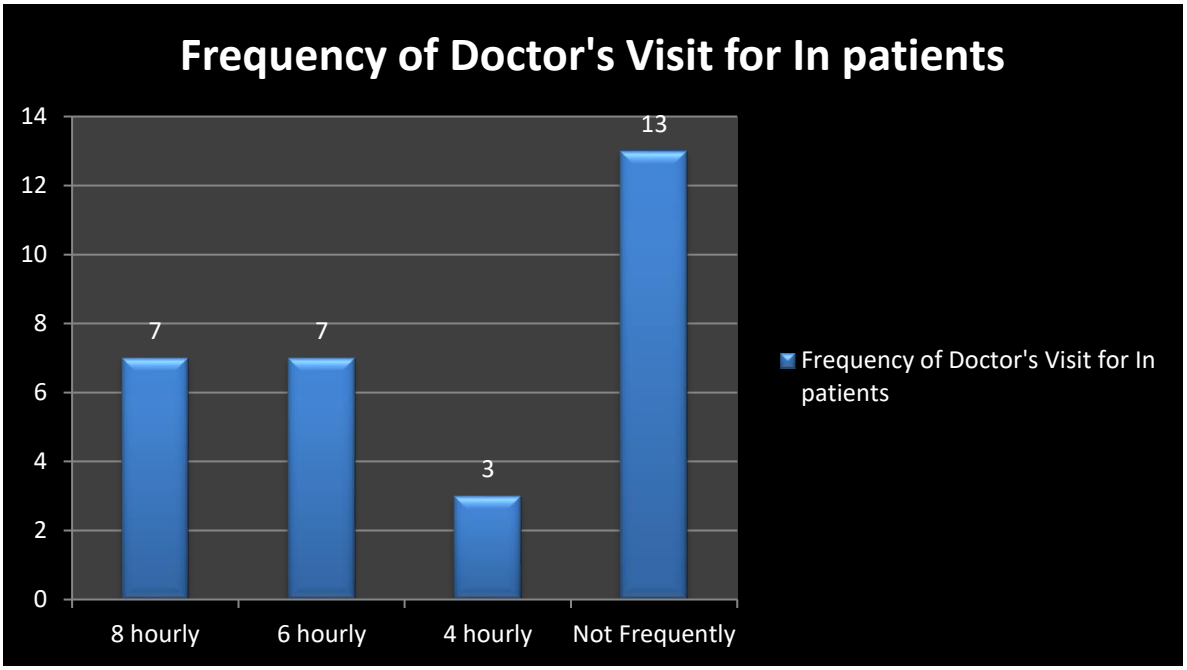


Fig.12 Frequency of doctor's visit for In patients

About 43% of the patients were of the opinion that the In-Patients were NOT Frequently visted by the doctors on Duty. Whereas 23% of the In-Patients were visted every 8 and 6 hours each.

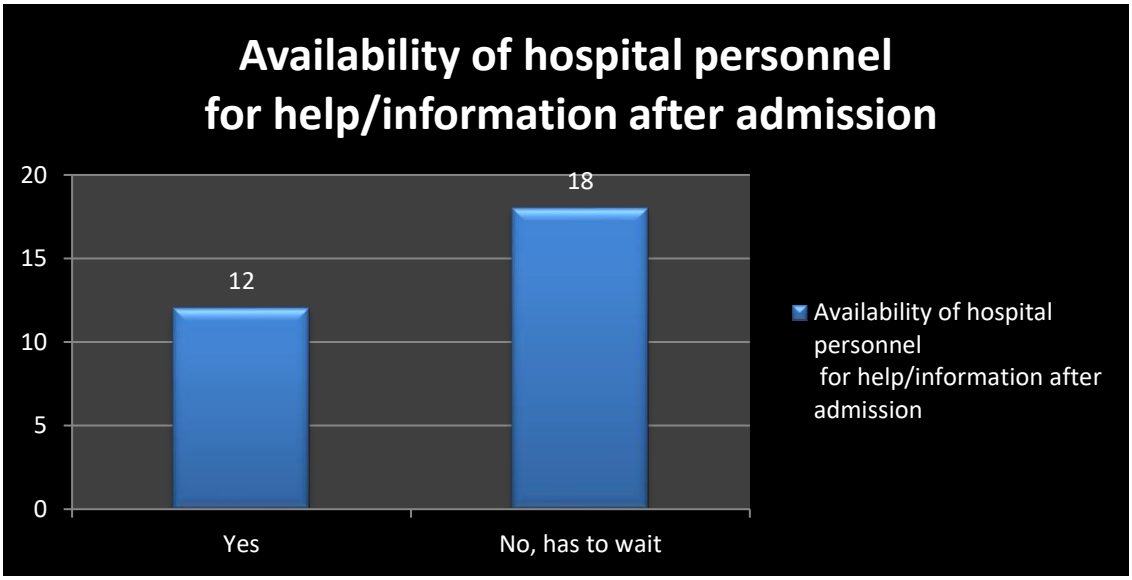
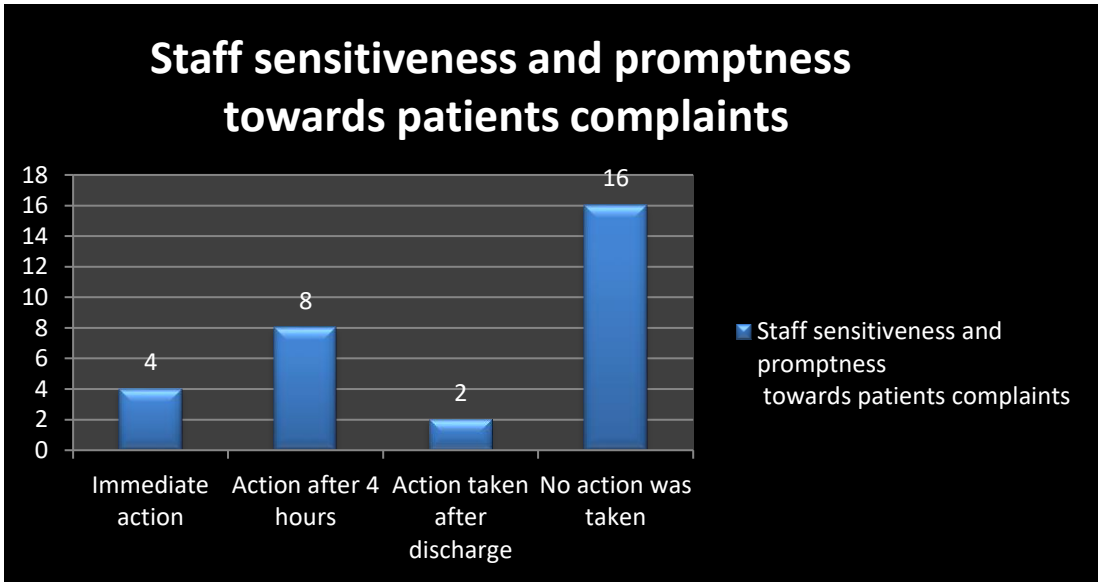


Fig.13 Availability of hospital personnel for help

A large percentage of the patients, about 60%, complained lack of assistance after admission.



The study reveals that about 53% of the patient's complaints were left unattended, whereas 27% revealed that their complaints were addressed after 4 hours, 13% patients praise the prompt and immediate action of the hospital. 7% of the patients also revealed that their complaints were addressed only after discharge.

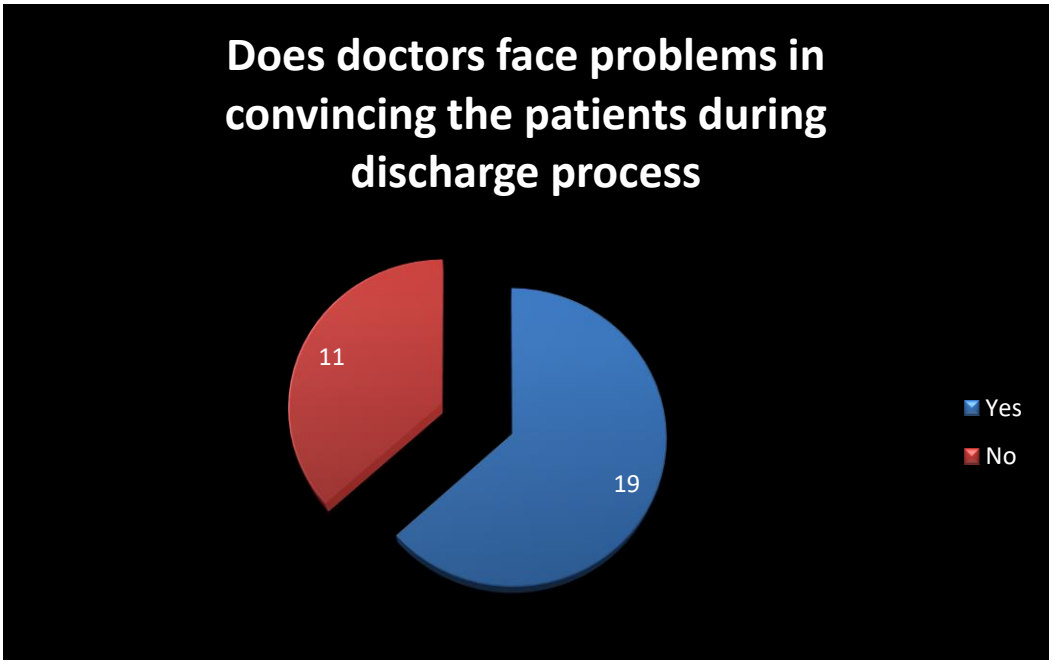


Fig.14 Problems faced in convincing patients

63% of the doctors were of the view that it is difficult to convince a patient for dischrage whereas 37% of the doctors did not face any problem in convincing the patients about their discharge.

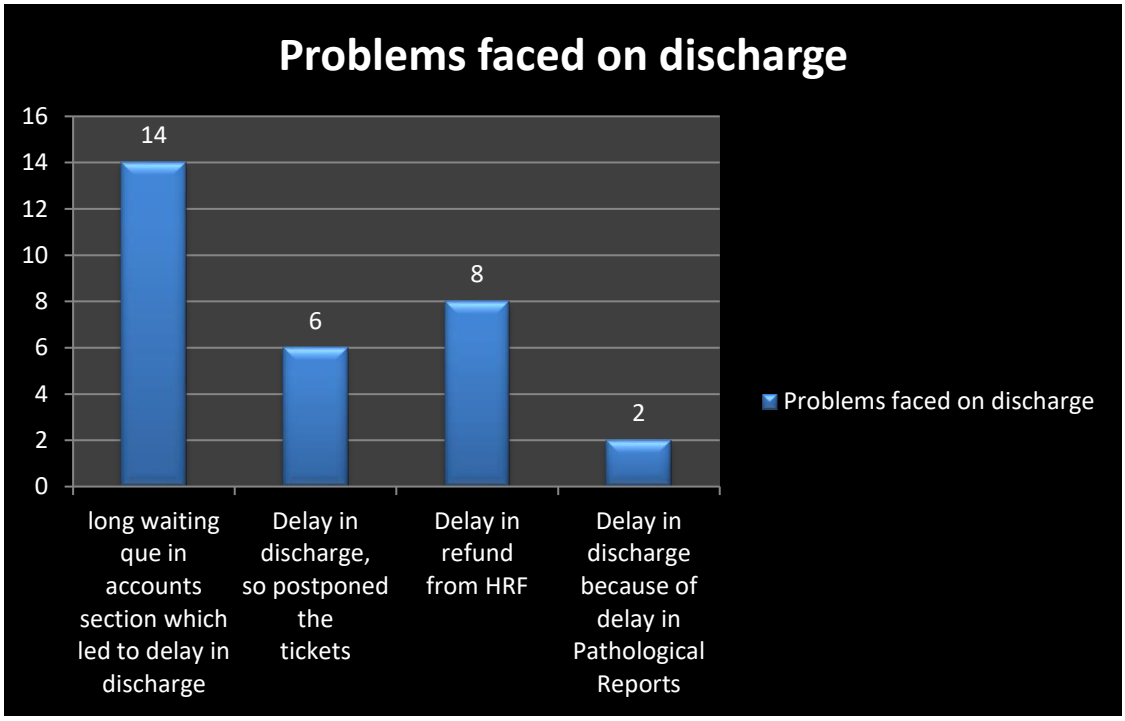


Fig. 15 Problems faced by the patients during discharge process

Long waiting que in accounts for clearance of bill is the major contributor to the delay in discharge procedure in 47% of the cases, in 20% of the cases the patients had to get their tickets postponed due to avoidable delay in discharge procedure. The study also brought out that in 27% of the cases, the delay was attributed to refund procedure assosciated with HRF. In 7% of the cases delay in reciept of pathological reports resulted in delayed dischrge.

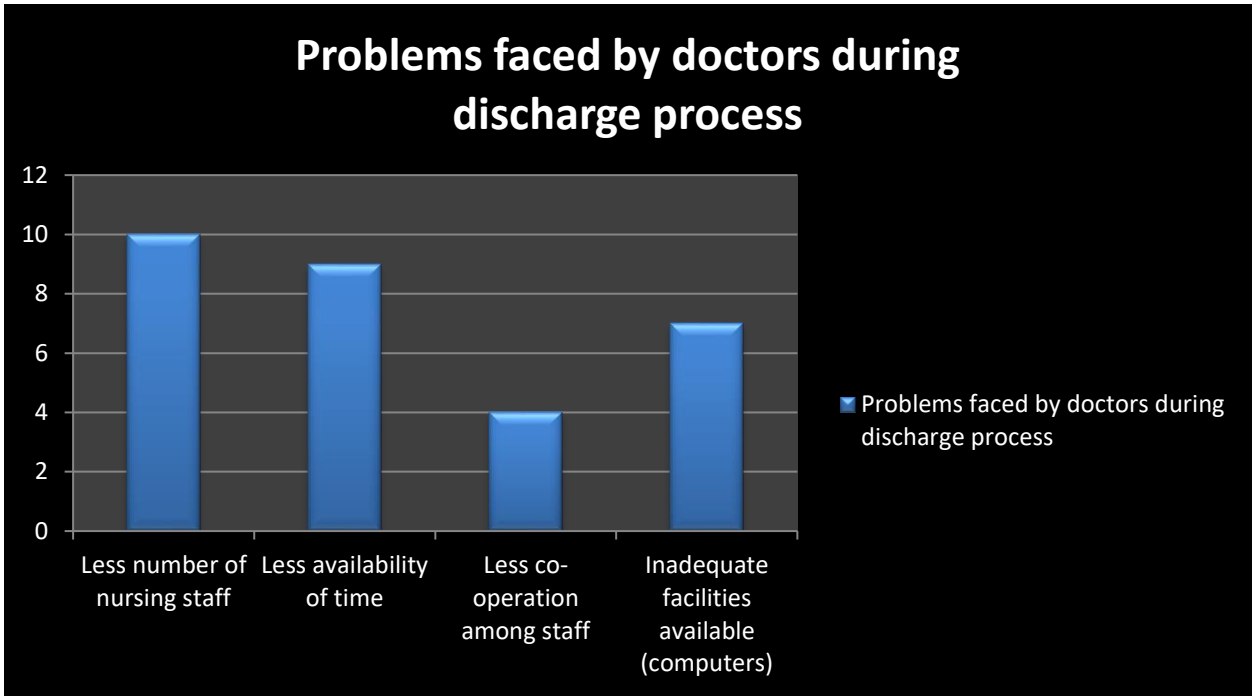


Fig.16 Problems faced by the doctors during discharge process

33% of the doctors felt that lesser number of nursing staff aggravates the discharge procedure. 30% of the doctors blame lesser time available to them which results in delayed discharge of the patients, 23% also attributed the delay to inadequate facilities like computers and related peripherals. 13% of the doctors are of the view that lack of co-operation amongst various department adds to the delay in discharge of the patients.

Recommendations for Streamlining the discharge process:

Based on the present study, following recommendations were made:

- HIS server has emerged as the primary cause of delay in discharge procedure, various technical procedures exist to overcome the same.
- The hospital technical staff should aim at improving the uptime of HIS server through technical solutions like auditing the hospital network or installation of redundant servers.
- The hospital administration should explore the possibilities of a speedier bill clearance system to enhance patient satisfaction and reduce the overall Discharge cycle time.
- Increase in number of counters in the accounts section is recommended to make billing process easier for patients.
- It is recommended that basic infrastructural inventory like wheel chairs, stretchers etc should be catered in sufficient number so as to escape the avoidable delay.
- SGPGI is one the premier medical institute of the country, recruitment of required manpower in each department would not only improve patient to nursing staff ratio but also but also enhance the patient satisfaction levels leading to an increased investment of faith in the institute and friction-less inter working of the various departments.
- It is recommended that the hospital administration should take constructive measures to promote synergy, harmony and better coordination among various departments.
- Ward rounds should be scheduled in a way that allows, at least daily, for a senior resident to review all patients.
- Information should be captured throughout the hospital stay, not just at the time of discharge or after the discharge order has been issued by the physician.

DISCUSSION:

Discharge process has emerged as one of the major concerns in SGPGIMS , which in turn is affecting patient's satisfaction to a large extent .

The major factors responsible for delay were:

- ✓ HRF contributing 60%
- ✓ Billing contributing 38.75%
- ✓ Internal transport 2% (approximately)
- It was observed that the state of the art, HIS, which was initially developed with the hope of accelerating the hospital process emerged as one of the major delaying factor
    - ✓ On further analysis of HRF , it was revealed that 70% of delay was caused due to HIS and 30% was caused due to other reasons

- Unavailability of sufficient manpower also emerged as a matter of major concern. It was found that:
    - ✓ Each ward in SGPGIMS have 30 bed (24 general and 6 private)
    - ✓ Each ward has 12-15 nurses (while according to hospital norms it should have at least a minimum of 18 nurses)
    - ✓ There are only 4 ward attendants and are involved in doing multiple tasks.
    - ✓ Each department should have 12-15 Senior Residents , but to a great surprise there are only 3-4 SRs in each department
    - ✓ Besides these there is a shortage of manpower in the Central Transport of the Hospital.

The information captured from the above mentioned data is that since, there is a huge shortage of manpower in the hospital , therefore, the available personnel have to perform multiple functions at one time (e.g. SR have to be in various places like O.T., ward, ICU etc . at the same time . This cause late in the rounds by the doctors which in turn causes delay in preparation of discharge order for patients.)

Present study reveals various factors for Delay in discharge process . By Improving these bottlenecks the discharge process will be improved without causing much discomfort to patient.

CONCLUSION:

- Total quality management is the key for success of any hospital. Bench marking of various processes for their times costs are very important factors leading to patient satisfaction. The present study can help in Bench Marking the procedures/process time of Discharge , in SGPGIMS
- This study is useful to determine the number of specialists required in order to provide optimum service, better usage of equipment, materials, human resource skills and technology. It should be kept in mind that reduction in time for various activities associated with Discharge is the key.
- Business Process Re-engineering (BPR) for various internal methods and procedures can bring strategic advantages to a hospital in future plans.
- Adoption of latest technology can make all the difference.

The hospital discharge is a prototypical condition for the patient safety movement. It is common and risky but non standardized from patient to patient and hospital to hospital. Responsibility for its implementation is fragmented among many hospital staff. Adverse events occur in approximately 1 of 5 discharges that may lead to preventable hospital use. These factors result in extraordinarily high and unnecessary health care costs.

"It is not the clinical condition per se which causes the delay, but how organizations are managing services to care for people with these clinical conditions that cause the greatest delays".

Improving the overall discharge process will result in improved patient satisfaction, patient throughput, hospital capacity, and financial performance.

References:

1)Encyclopedia of Surgery www.surgeryencyclopedia.com › Ce-Fi

2)- National Quality Forum. Pre-voting Review for Safe Practices for Better Healthcare-2006. Available at: http://www.qualityforurn.org/docs/

3)Discharge Planning Guide: Tools of compliance- Jackie Brimingham RN, MS

4)Effective Discharge Begins at Admission A Patient Flow Logistics Coordination Model Prepared by Ben Sawyer

6) A Study on Emergency Care and Patient Discharge Process -Application of Network Analysis Author(s): B. Krishna Reddy, G.V.R.K. Acharyulu Vol. 15, No. 1 (2003-01 - 2003-06)

7) An analysis of the average waiting time during the patient discharge process at Kashani Hospital in Esfahan, Iran: a case study; Sima Ajami and Saeedeh Ketabi

8) The Hospital Discharge: A Review of a High Risk Care Transition With Highlights of a Reengineered Discharge Process Jeffrey L. Greenwald, MD, * Charles R. Denham, MD, .f. a n d Brian ***W.*** Jack, MD

9) Analysis, Modeling and Improvement of Patient Discharge Process in a Regional Hospital ; by Nancy Khurma

10)PATIENT SATISFACTION SURVEYS FOR CRITICAL ACCES HOSPITALS Written by: Linda Powell, MSIPT ; lpowell@mtnstatesgroup.org

10) Discharge Process Improvement: A Case Study by Barnes-Jewish Hospital of St. Louis

LIST OF APPENDICES

ANNEXURE 1

QUESTIONAIRE FOR SENIOR RESIDENTS

(STREAMLINING THE DISCHARGE PROCESS)

NAME:

DEPARTMENT:

1) According to you is insufficient manpower one of the Major Problems causing delay in discharge process

   () yes () No

2) Are you satisfied with the HRF facilities in the hospital?

   () Very Satisfied () Satisfied () Neutral () Unsatisfied

   () Very Unsatisfied

3) Are you satisfied with the HIS facilities in the hospital?

() Very Satisfied () Satisfied () Neutral () Unsatisfied

() Very Unsatisfied

4) Do you think that HIS system is one of the major Problem in delay of the discharge process?

() Strongly agree () Agree () Neutral () Disagree

() Strongly Disagree

5) Do you face any Problems from the accounts section during the discharge process?

() Yes () No

6) Do you face problems in convincing the patients (Ignorant Patients) during the discharge process (e.g. patients not ready to leave the hospital before removal of the stitches etc.)?

() Yes () No

7) Due to this do you think that this is also one of the major problems in the delay of Discharge?

() Yes () No

8) Do you think that the availability of less no of computers in the Department also creates problems during the Discharge Process?

() Yes () No

9) Any other Problems Faced by you during the discharge Process

() Less No . of Nursing Staff

() Less availability of time

() Less co-operation among staff

() Inadequate facilities available () None

ANNEXURE 2

QUESTIONAIRE FOR PATIENTS

Name of the patient:

Age:

Sex:

Disease:

Length (No. of days) of Stay in Hospital:

1. When have you been informed about the discharge from the Hospital?
   () just before discharge () 3-4hrs back () 6-8 hrs back
   () Yesterday

2. How frequently the Doctors and nurses visited you?
   ()8 hrly () 6 hrly () 4 hrly () not frequently

3. Whether the suggested pathological tests were done from the hospital?

   () Yes () No

4. If Yes, then what time it took to get the reports?

   () 2-3 hrs ()6-8 hours () 8-12 hours () Next day

5. If No, then weather provision should be made in the hospital itself?

   () Yes () No

6. Whether medicines and other necessary nursing materials were made available from the hospital during discharge? If yes how much total time was spent there?

   () Less than 1 hr () 1-2 hr () 2-3 hr () more than 3 hr

7. If yes, then the time taken in HRF is

   () 2-4 hours () 4-6 hours () 6- 8 hours () More than 8 hours

8. If No, then medicines and other necessary nursing materials should be made available from the hospital?

   () Yes () No

9. Whether you were informed well in advance in clearing your final bill.

   () Yes () No

10. How much total time was taken in the accounts section for clearance of bill:

    () Less than I hr ()1-2 hr () 3-4 hrs () More than 4 hrs

11. Were the hospital personals available for help whenever you required co-operation from them or you had to wait for their help?

( )Yes available () No, had to wait

12. Hospital staff sensitiveness and their promptness towards the patients' inconvenience whenever you complained.

() Immediate action () Action take after 4hrs

() Action take after discharge () No action was taken

13. Your experience about the co-ordination amongst the hospital staff

() Very good () Good () Neutral () Bad ()Very bad

14. Whether you required the wheelchair or other like facilities after discharge?

() Yes ( ) No

15. Total waiting time for Internal Transport

()1 hr () 2 hr () more than 2 hr () not required

16. If yes, when the same was made available after completing discharge formalities?

() Yes () No

17. The overall behavior of the hospital staff towards the patient since admission till discharge

() Very good () Good () Neutral () Bad () Very bad

18. Any other problems faced:

() Unavailability of transport facilities (wheelchairs etc.)

() Had to postpone your ticket due to delay in Discharge

() No returning of the fund at the time from HRF on returning of medicines

() long waiting que

ANNEXURE 3

QUESTIONAIRE FOR NURSING STAFF

1. Do you face problems in discharge process of a patient?

   () Yes () No

2. Is there adequate nursing manpower in your department/section?

   () Yes () No

3. Whether the information about the discharge of a patient is given by the concerned doctor well in advance?

   () Yes () No

4. When are patients informed about their discharge from the hospital?

   () Now () 3-4hrs back () 6-8 hrs back () Yesterday

5. Is inter-departmental co-ordination satisfactory in discharging your duties?

   () Very Satisfactory () Satisfactory () Neutral () Unsatisfactory

   () Very Unsatisfactory

6. Problems generally faced due to the unavailability of transport facilities (wheelchair etc.) during discharge process:

   () given to less required patients() long waiting time() unavailability of personnel

   () None of these

7. Satisfaction level of HRF services

   () Very Satisfactory () Satisfactory () Neutral () Unsatisfactory

   () Very Unsatisfactory

8. Is the HIS facility and services adequate?

   () Very adequate () Adequate () Neutral () Inadequate

   () Very Inadequate

9. Have you faced any problem from account section in bill clearance or otherwise?

   () Yes () No

10. Any other problem generally faced in discharging your duties during discharge of a patient

    () Patients Reluctant not to go before complete healing or due to some other reasons

    () inadequate no. of Doctors/ Senior Residents Available

    () Delay in Receiving post operative tests reports from labs

    () less time available to doctors

Report:

Report_001(1).xlsx

Attachment 1

	HRF		Accounts		Int Trans	
Patient 1		5	3	3.5	4	
Patient 2		3	4	5	1	
Patient 3		7	2	1.5	4	
Patient 4		3	4	5	1	
Patient 5		3	2	1.5	1	
Patient 6		3	2	1.5	1	
Patient 7		7	3	3.5	1	
Patient 8		5	4	5	1	
Patient 9		5	3	3.5	1	
Patient 10		5	4	5	1	
Patient 11		3	3	3.5	4	
Patient 12		7	3	3.5	2	
Patient 13		7	3	3.5	1	
Patient 14		3	4	5	2	
Patient 15		5	2	1.5	1	

Patient 16		5		3	3.5	4	
Patient 17		3		3	3.5	4	
Patient 18		5		3	3.5	4	
Patient 19		5		3	3.5	4	
Patient 20		3		2	1.5	1	
Patient 21		3		3	3.5	4	
Patient 22		5		3	3.5	1	
Patient 23		10		4	5	4	
Patient 24		3		3	3.5	1	
Patient 25		5		2	1.5	1	
Patient 26		5		3	3.5	1	
Patient 27		7		2	1.5	1	
Patient 28		5		1	0.5	1	
Patient 29		3		1	0.5	4	
Patient 30		5		3	3.5	1	

Attachment 2

	HRF			
	Option 1	Option 2	Option 3	Option 4
	() 2-4 hours	() 4-6 hours	() 6- 8 hours	() More than 8 hours
Patient 1	3	5	7	10
Patient 2	3	5	7	10
Patient 3	3	5	7	10
Patient 4	3	5	7	10
Patient 5	3	5	7	10
Patient 6	3	5	7	10
Patient 7	3	5	7	10
Patient 8	3	5	7	10
Patient 9	3	5	7	10
Patient 10	3	5	7	10
Patient 11	3	5	7	10
Patient 12	3	5	7	10
Patient 13	3	5	7	10
Patient 14	3	5	7	10
Patient 15	3	5	7	10
Patient 16	3	5	7	10
Patient 17	3	5	7	10
Patient 18	3	5	7	10
Patient 19	3	5	7	10
Patient 20	3	5	7	10

Patient 21	3	5	7	10
Patient 22	3	5	7	10
Patient 23	3	5	7	10
Patient 24	3	5	7	10
Patient 25	3	5	7	10
Patient 26	3	5	7	10
Patient 27	3	5	7	10
Patient 28	3	5	7	10
Patient 29	3	5	7	10
Patient 30	3	5	7	10

Attachment 3:

	Accounts			
	Option 1	Option 2	Option 3	Option 4
	() Less than I hr	()1 -2 hr	() 3-4 hrs	() More than 4 hrs
Patient 1	0.5	1.5	3.5	5
Patient 2	0.5	1.5	3.5	5
Patient 3	0.5	1.5	3.5	5
Patient 4	0.5	1.5	3.5	5
Patient 5	0.5	1.5	3.5	5
Patient 6	0.5	1.5	3.5	5
Patient 7	0.5	1.5	3.5	5
Patient 8	0.5	1.5	3.5	5
Patient 9	0.5	1.5	3.5	5
Patient 10	0.5	1.5	3.5	5
Patient 11	0.5	1.5	3.5	5
Patient 12	0.5	1.5	3.5	5
Patient 13	0.5	1.5	3.5	5
Patient 14	0.5	1.5	3.5	5
Patient 15	0.5	1.5	3.5	5
Patient 16	0.5	1.5	3.5	5
Patient 17	0.5	1.5	3.5	5
Patient 18	0.5	1.5	3.5	5
Patient 19	0.5	1.5	3.5	5
Patient 20	0.5	1.5	3.5	5
Patient 21	0.5	1.5	3.5	5

Patient 22	0.5	1.5	3.5	5
Patient 23	0.5	1.5	3.5	5
Patient 24	0.5	1.5	3.5	5
Patient 25	0.5	1.5	3.5	5
Patient 26	0.5	1.5	3.5	5
Patient 27	0.5	1.5	3.5	5
Patient 28	0.5	1.5	3.5	5
Patient 29	0.5	1.5	3.5	5
Patient 30	0.5	1.5	3.5	5

Attachment 4:

	Internal Transport			
	Option 1	Option 2	Option 3	Option 4
	()1 hr	() 2 hr	() more than 2 hr	() not required
Patient 1	1	2	4	0
Patient 2	1	2	4	0
Patient 3	1	2	4	0
Patient 4	1	2	4	0
Patient 5	1	2	4	0
Patient 6	1	2	4	0
Patient 7	1	2	4	0
Patient 8	1	2	4	0
Patient 9	1	2	4	0
Patient 10	1	2	4	0
Patient 11	1	2	4	0
Patient 12	1	2	4	0
Patient 13	1	2	4	0
Patient 14	1	2	4	0
Patient 15	1	2	4	0
Patient 16	1	2	4	0
Patient 17	1	2	4	0
Patient 18	1	2	4	0
Patient 19	1	2	4	0
Patient 20	1	2	4	0
Patient 21	1	2	4	0

Patient 22	1	2	4	0
Patient 23	1	2	4	0
Patient 24	1	2	4	0
Patient 25	1	2	4	0
Patient 26	1	2	4	0
Patient 27	1	2	4	0
Patient 28	1	2	4	0
Patient 29	1	2	4	0
Patient 30	1	2	4	0

Attachment 5:

On the basis of the above data following calculations (in hrs) is done:

Central tendency					
Average	4.8		3.1		0.7
Median	5.0		3.5		1.0
MODE	5.0		3.5		1.0
Standard Deviation	1.7		1.4		0.6
Variance	3.0		1.9		0.3

The Above attachments represents Following:

- In **attachment1**, we have taken the average value for each option (e.g. 2-3 hrs we have taken 3 hrs). We have mentioned values as observed in all the patients.
- In **attachment 2**, the average time taken by each patient in the HRF is taken
- In **attachment 3** , the average time taken by each patients at the billing counter is taken
- In **attachment 4,** the average time taken by each patient in order to wait for the internal transport is taken