



A STUDY ON CRITICAL EVALUATION OF EMERGENCY SERVICES AT AN EXCLUSIVELY TERTIARY HEALTHCARE TEACHING INSTITUTE AT LUCKNOW, UTTAR PRADESH

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Abstract:

Introduction: An **Emergency Department (ED)**, also known as **Accident & Emergency (A&E)**, **Emergency Room (ER)**, or **Casualty Department** is a medical treatment facility, specializing in acute care of patients who present without prior appointment, either by their own means or by ambulance. Emergency medical services is an important aspect of acute medical care provided by the hospital. The Emergency department is frequently thought of as a microcosm of the Hospital as a whole. It is also the "front door" of the hospital-

According to WHO Emergency has been defined as a condition determined clinically or considered by the patient or his/her relatives as requiring urgent medical care failing which it could result in loss of life or limb.

The first specialized trauma care centre in the world was opened in **1911** in the United States at the University of Louisville Hospital in Louisville, Kentucky, and was developed by **surgeon Arnold Griswold** during the **1930s**.

As compared to developed countries with proper emergency systems in place, there is no single system which could play a major role in managing emergency medical services in India. The Emergency Medical Services have always been a part of hospital services in India. Emergency medicine is not recognised as a specialty.

India should have far more accessible and reliable emergency medical services irrespective of geographical factors, says Dr. Rao.(Chairman Rao Committee 1968) Another important component missing in the current system, and one that will be needed in the long-run, is a body to regulate the EMS in the country. —LSAS in Mumbai claims that it had saved 22,000 lives in three years while EMRI in Hyderabad claims saving 55,000 lives in one year, says Dr Rao, but there is no way to validate these claims and introduce corrective measures.

During the 1990s, an effort began to change previous naming conventions to the more accurate term **Emergency Department (ED)**, which is a term increasingly used by members of the specialty internationally. Emergency Departments are known as "*Servicios de Urgencia*" and they function in a similar fashion to European Emergency Departments.

The Golden Hour Concept Given by **Dr .R. Adam Cowley in 1968**. A patient's chance of survival is greatly improved if the patient receives definitive treatment (i.e. surgery or reperfusion) within one hour of an accident (such as a car accident) or onset of acute illness (such as a heart attack). This critical time frame is commonly known as the "**golden hour**".

The Platinum Ten Minutes- Concept given by **Dr. James Styner (Founder of Advanced Trauma Life support ATLS)** First ten minutes after an accident or an acute illness following the arrival of the key personnel in the rescue team are known as the **Platinum Ten Minutes**

The Emergency department has become an integral and vital component of a health care system. The volume of the patients seeking routine care in Emergency department has grown considerably. The major contributors being rapid industrialization and increase vehicle traffic.

Furthermore, the emergency department remains one of the few places where provision of health care unequivocally takes precedence over financial and legal considerations. Round the clock availability is another aspect that contributes to the popular characterization of Emergency department as a front door of the hospital.

Emergency medical systems are complex and highly capital intensive. Evaluation is necessary to examine the performance of the whole system and individual components. All emergency care system include components of communication, transportation, medical facilities , manpower, coordination and of course, Emergency medical technique i.e. clinical knowledge.

REVIEW OF LITERATURE

Improving the quality and safety of health care for every patient across the globe may be an audacious goal, but still progress is being made through the work of various organizations, also in collaboration with international organizations such as the WHO, Ministries of Health, and more than 340 individual health care organizations.

1946 Bhore Committee : The first serious attempt to work out an integrated system of health Services in India was made by this committee which covered aspects of Emergency care.

ⁱⁱ**1961: Mudaliar Committee** was appointed by Govt. Of India, this laid emphasis on emergency care. The development of emergency medical care in India started in Nov. 1963 during Central Council of Health meeting which urged all state governments to set up emergency medical services in all major cities and towns.

2007: American College of Emergency Physicians revised guidelines & provided outline & references about resources & planning needs in ED.

2010: National Accreditation Board of Hospitals

National Accreditation Board for Hospitals & Healthcare Providers (NABH) is a constituent board of Quality Council of India, set up to establish and operate accreditation programme for healthcare organizations. The board is structured to cater to much desired needs of the consumers and to set benchmarks for progress of health industry. The latest revised Guidelines in 2010 laid down a detailed assessment kit consisting of 10 Chapters, 100 standards and 514 objective elements.

ⁱⁱⁱ A study for assessment of patient satisfaction in emergency was done by evaluating the health care delivery system, attitude and behaviour of healthcare givers and extent of available health facilities. Attitude and behaviour of healthcare providers were found to be satisfactory by the respondents. However, some basic requirements in emergency department of the hospital like availability of telephone, provision of safe drinking water and general sanitary conditions need to be fulfilled.

^{iv}**In 2005 in Emergency Services Department, University of Pennsylvania, Philadelphia, USA** In order to find out the relationship between the quality of medical records and patients' health status outcome if any. They found that the quality of records to be negatively, although not significantly, related to patients' health status and concluded that that quality assurance programs periodically should include reviews of patients' health status outcomes.

^vCrowding negatively impacts all stakeholders: patients, physicians, and the hospital Most important is patient safety, with decreased quality of care and an increase in medical errors in overcrowded ED. Further, patients have a poor experience, which leads them to leave without being seen, and they are less likely to return to the ED in the future.

^{vi}Emergency medicine does not exist as an organized specialty, and emergency departments are staffed by a combination of residents and attending physicians from various specialties. An infrastructure for providing emergency care exists at all levels of the state-owned medical system, and in private hospitals. At every level, medical centres lack adequate resources to manage the breadth of clinical problems encountered. Tertiary EDs care for large numbers of patients with high-severity conditions.

Since the emergency services is the portal entry of maximum number of patients requiring immediate medical care and it functions like a mini hospital in itself. its importance in public image building is very obvious. It can mask or make the image of any hospital.

Sanjay Gandhi Post Graduate Institute of Medical Sciences, being a large tertiary care hospital in public sector in India catering to patients from all over India, neighboring countries like Nepal , Bangladesh, Srilanka , Bhutan and other Asian countries. Its Emergency Department is different from other hospitals as many basic facilities for the emergency treatment are not available here. Therefore it was named Emergency Receiving station(ERS). Because initially SGPGIMS had no ERS as it was deemed that superspecialised treatment will be given in ward but as the institute grew, the need for basic structured emergency was felt. At present ERS is functional for the 20 years. A study was done in 2010, before the formation of Emergency Department to study its structure, workload, detention period, attendance ratio between OPD and ERS with respect to a routine Emergency Medical services of a super specialty hospital.

.No such has been done in SGPGIMS in last five years specially after formation of department of Emergency Medicine. So here we critically evaluate the existing system in emergency medicine against standard guidelines and also beholds importance to gather relevant information keeping in mind to improve the quality of the present emergency services at SGPGIMS.

The aim of this study was “To critically evaluate Emergency Services at an exclusive super speciality Healthcare Teaching Institute at Lucknow., Uttar Pradesh” and objectives of the study were;

1. To evaluate the emergency services from the perspective of Input, process and output using a pre validated tool
2. To assess the level of compliance by using pre validated tool
3. To analyze the gap , if any
4. To make recommendations to bridge the gap, as appropriate

METHODOLOGY

- Ascertaining Study setting
Gandhi Post Graduate Institute of Medical Sciences, Lucknow
- Ascertaining Study area
Emergency Receiving Station (ERS 1)
- Ascertaining Duration of study
1st January 2015 to 31stMarch 2015, time span of three months

Sanjay

- Ascertaining study type

Descriptive observational study was done

- Inclusion criteria

Entire Emergency Receiving Station 1 was in purview of this study

- Exclusion Criteria

Emergency Receiving Station- 2

Emergency Transport (Ambulances)

Tools & Techniques

Study was conducted in two parts

- Part 1- Study of the existing National & International guidelines available for Emergency Department was done with the help of ACEM Emergency Department Design Guidelines manual October 2014, S.K. Joshi– Quality Manual in Hospitals, P.K., Dave, Shakti kr. Gupta et al –Emergency Medical Services & Disaster Management to prepare the study tool.

- Part 2- Assessment of Emergency Services of SGPGIMS in reference to input, process and output against the developed study tool by different books and studies viz. Shakti kumar Gupta. – Modern trends in planning & Designing of Hospitals: Hem Chandra, Vivek Chauhan - Profile of Medical Services at a tertiary care hospital: Project report conducted at AIIMS –To study and Evaluate Emergency Services at AIIMS.

- Based on observations against available standards, gaps were identified and measures of Improvement were suggested.

Data Collection

- An administrative checklist of all the Input& process elements was enlisted under the broad headings of standards for Input & Process.

- The Input standards included elements from INFRASTRUCTURE, EQUIPMENT & STAFFING. This observational checklist was completed & the parameters were relevantly marked under being compliance, partial compliant, non compliant.

- The process compliance were studied through SOP's available for Emergency department
- Observational study was done and information was collected based on records & interaction with key Informants to understand the Process and functioning of emergency services.
- Comparative Outcome for the month of January & March was studied in terms of no. admissions, No. Of discharge, No. of transfer, LAMA cases, shift wise patient load, Department wise length of stay.

Scoring Criteria for calculation of Compliance score

For calculating the compliance score a score of 10 was awarded to all the Elements for complete compliance, a score of 5 for partial compliance & the indicators which were non compliant were given a score of 0.

Data Analysis

Data analysis was done using software Microsoft Word, Microsoft excel sheet for tabulation. Data was represented with appropriate tables, and charts.

OBSERVATIONS

ABOUT WORKPLACE: SANJAY GANDHI POST GRADUATE INSTITUTE OF MEDICAL SCIENCES

“Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow” has been established by the state of Uttar Pradesh (India) to create a centre of excellence for providing medical care, education and research of high order. It is chartered to function as university under state Act. The Institute aims to provide advance specialized medical care such as is available only at few centres in the country and nowhere else in the state.

The main hospital is having 1003 beds, 21 well equipped specialty operation rooms, 16 beds intensive care unit and a 32 beds dialysis unit are also running. For ambulatory care there is provision of specialty clinics, also there is well established Emergency Medical Care Receiving Station.

EMERGENCY SERVICES AT SGPGIMS

In the original charter of SGPGIMS, it was considered that this super specialty hospital would provide only tertiary care in an elective manner to patients referred from hospitals providing secondary level care and emergency will not be catered . The concept was mainly to provide services which were not normally available in the region so that there was no duplication of specialized services. It was thought then that absence of emergencies would allow sgpgims to focus on highly specialized procedures such as organ transplantation, brain aneurysms, cardiac interventions etc as these require well planned, multidimensional

team effort often with use of specialized sophisticated equipment. In the early 90s this issue was revisited with the following two arguments:

1. When a patient with available specialty reports hospital in acute condition, who will cater the need?
2. As the most clinical departments started super specialty courses (DM/MCH), their curriculum and training required that they manage emergencies as well.

Due to these reasons a limited “Emergency Receiving Station” was created in one of the vacant wards in 1994, mainly to cater to patients on “follow up” at SGPGIMS. Over the last decade, the ERS gradually started accepting new cases coming straight to the ERS with health problems pertaining to one of the available specialties at SGPGIMS.

New Emergency Receiving Station (ERS) was inaugurated in may 2004. The Emergency Receiving Station (ERS) was relocated and physically expanded in 2005-06. It is currently located at the front of the hospital block, has a separate entrance, has around 20 emergency beds and is manned by an Emergency Medical Officer (EMO) drawn from the Provincial Medical Services Of Uttar Pradesh, an Assistant Public Relation Officer (APRO), a contingent of nurses and other paramedical staff. It receives around 45-50 patients daily. The ers has facilities for providing resuscitation and first aid, and initiating emergency care in critically ill patients. A Hospital Revolving Fund (HRF) counter is located nearby for purchasing medicines and consumables items that are required for intermediate management of patients

Table . Depicts Staffing Pattern in ERS 1

Staffing Pattern in ERS 1				
Cadre	Designation	Morning shift(8:00am-2:00pm)	Evening shift(2:00pm-8:00pm)	Night shift(8:00pm-8:00am)
Doctors	Consultants	On call	On call	On call
	Senior Residents	On call	On call	On call
	EMO (08)	02	02	01
Nurses	Sister In charge	01	-	-
	Grade I sisters/staff nurses	02	02	02
	ANS	02	02	01
Group D staff	Hospital Attendant (10)	02	02	02
	Sanitary Workers (07)	02	02	01
Cash counter staff		04		

Scoring criteria^{\$}

For calculating the compliance score the scoring criteria was taken as per NABH guidelines. Under which score of 10 was awarded to all the indicators for complete compliance. Score of 5 given for Partial

compliant.

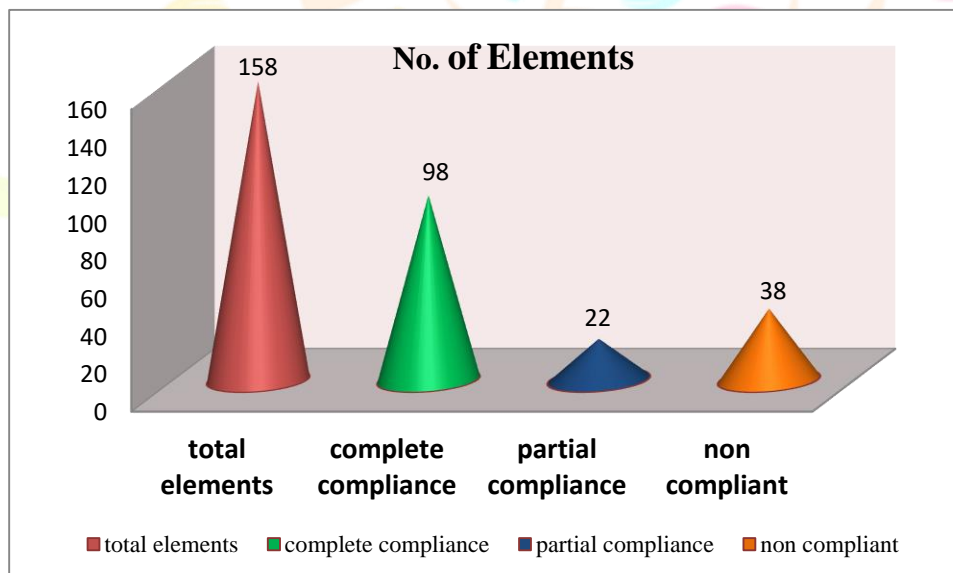
Score 0 given for indicators

which were non compliant

Table: Depicts the No. of Elements showing complete , Partial & Non compliance

TOTAL NO. OF ELEMENTS	COMPLETE COMPLIANCE	PARTIAL COMPLIANCE	NON COMPLIANCE
158	98	22	38

Chart: Depicts the No. of Elements showing the level of compliance



Inference: Above chart shows that total 158 standard Elements evaluated in Input & process. 98 elements were found full compliant. 22 Elements were partially compliant and 38 Elements did fall under non compliant.

Total score of all parameters - $158 \times 10 = 1580$

Compliance score for complete compliance - $98 \times 10 = 980$

Compliance score for partial compliance - $22 \times 5 = 110$

Total compliance score – $980 + 110 = 1090$

Percentage of compliance in Emergency Receiving Station of SGPGIMS, Lucknow =68.98 %

It was observed that out of 158 Elements assessed in totality, 98 were found to show complete compliance. 22 elements showed partial compliance. 38 Elements were found to be non compliant. After using the

scoring criteria the percentage of compliance in Emergency Receiving station of SGPGIMS in terms of input and process was found 68.98 %.

Table : Comparison between Input & Process Elements

Compliance	Input Elements	Process Elements
Complete	77	21
Partial	09	13
Non compliant	32	06
Total score	118	40

INPUT

Total score of all Input Elements- $118 \times 10 = 1180$

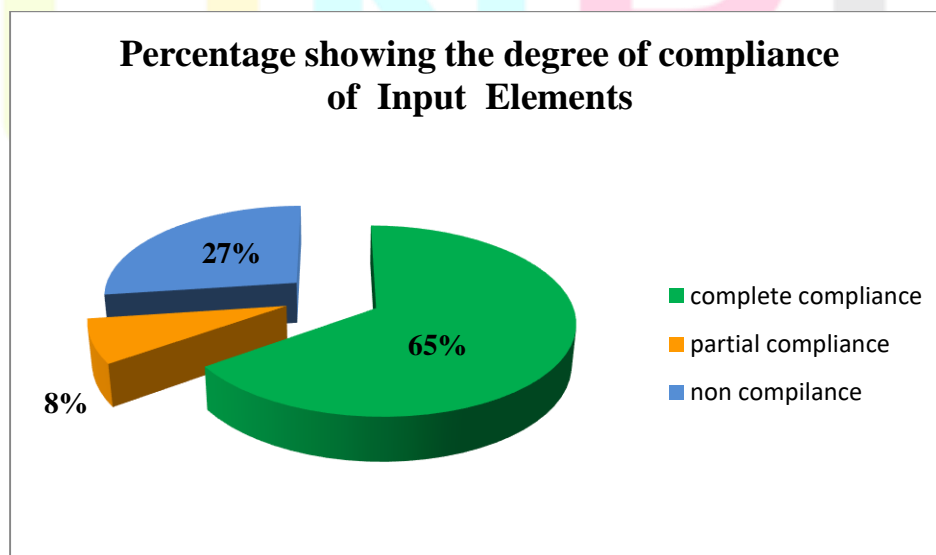
Compliance score for Complete compliance - $77 \times 10 = 770$

Compliance score for Partial compliance - $09 \times 5 = 45$

Compliance score- $770 + 45 = 815$

Overall percentage of compliance of Input Elements = 69.06 %

Chart: Depicts the percentage wise split up of Input Elements



Inference: From the above chart it was observed that out of 118 Input Elements 65 % were found complete compliance, 8% were partially compliant and 27 % Elements were non compliant.

PROCESS

Total score of all process parameters- $40 \times 10 = 400$

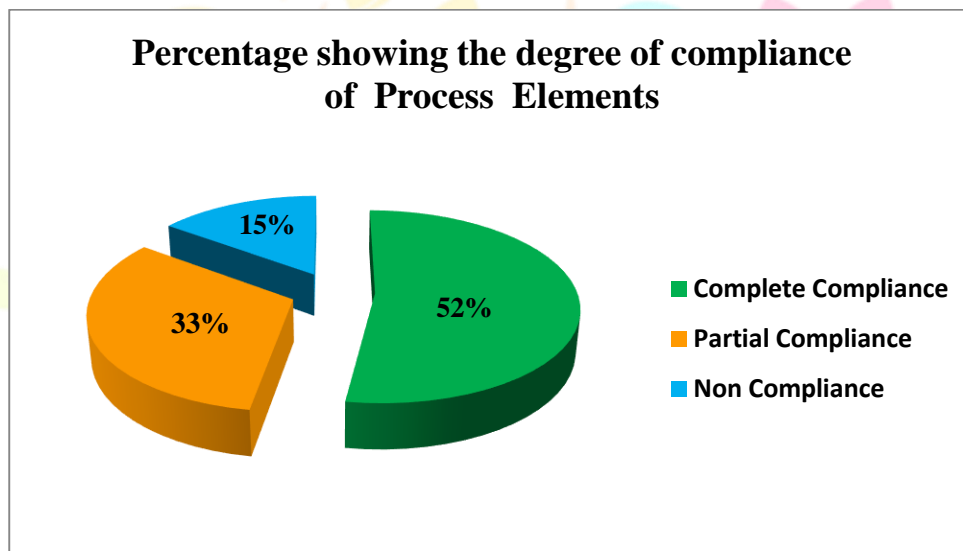
Compliance score for complete compliance- $21 \times 10 = 210$

Compliance score for partial compliance- $13 \times 5 = 65$

Compliance score- $210 + 65 = 275$

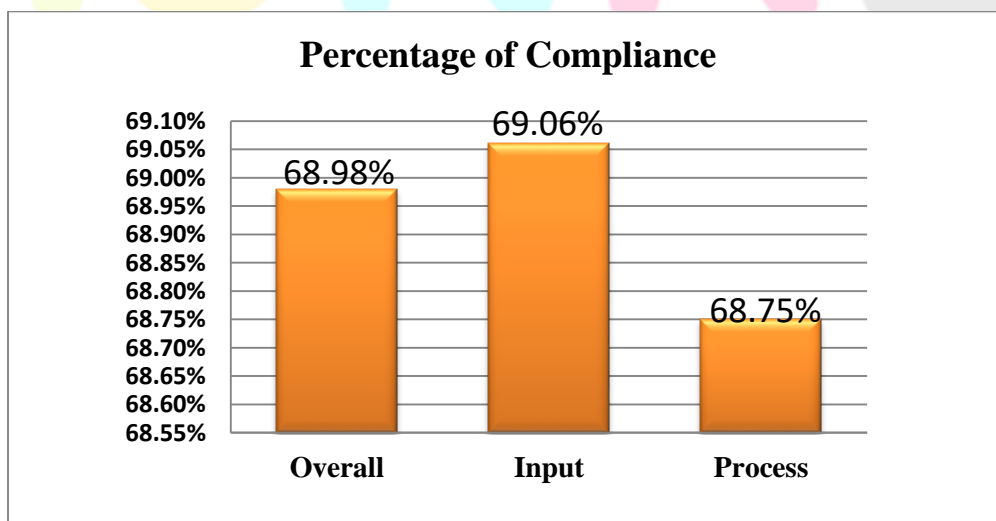
Overall percentage of compliance of Process Elements= 68.75

Chart: Depicts the percentage wise split up of Process Elements



Inference: From above chart it was observed that out of 40 Process Elements 52 % were found Complete compliance, 33% Elements were partially compliant and 15% Elements were non compliant.

Chart : Depicts Percentage of compliance of Input, Process & Overall



Inference : It was observed that overall compliance in ERS1 of SGPGIMS from the perspective of Input & Process is 68.98% . While percentage of Compliance of Input Elements was calculated 69.06% and percentage of compliance of Process Element is 68.75% .

Table : Split up of Input Elements

Input Elements split up	Complete compliance	Partial compliance	Non compliance	Percentage
Infrastructure	42	8	24	62.16%
Equipment	30	1	8	78.2%
staffing	5	0	0	100%

Inference: Above table shows that Input Elements were studied under the sub headers of Infrastructure, Equipment and Staffing.

Out of 74 Infrastructure Elements, 42 Elements were found completely compliant, 8 Elements were Partial compliant, and 24 Elements were Non compliant.

39 Equipment Elements were identified. 30 Elements were complete compliance, 1 Element was partial compliant and 8 Elements were non compliant. While 5 staffing elements were fully compliant which shows the No. of sanctioned staff and deployed staff is equal.

Thus the percentage Compliance for Infrastructure was calculated 62.16%, for Equipment 78.2% and for Staffing 100% respectively.

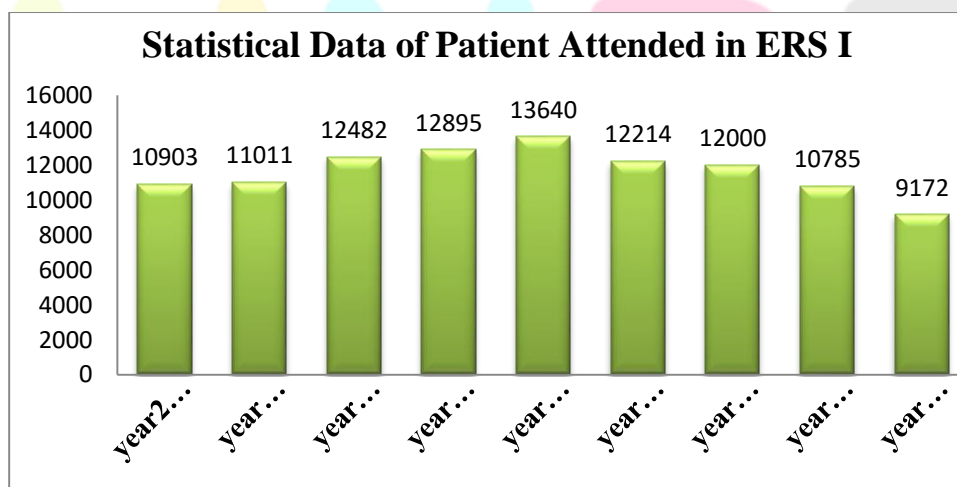


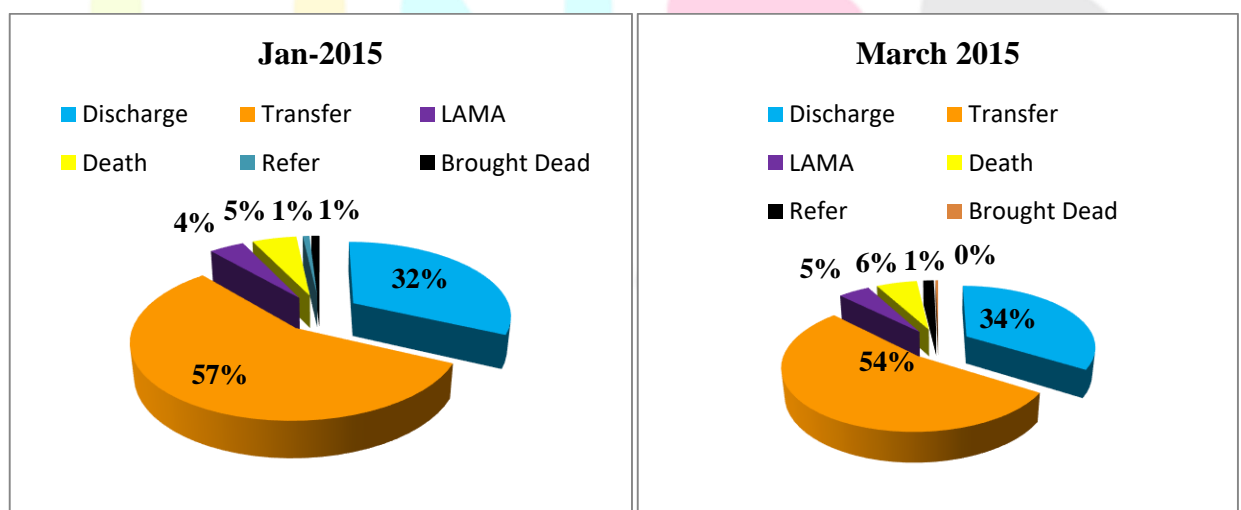
Chart : Statistical data of patients attended ERS1

Inference: From the above chart it was observed that the number of Admissions in ERS 1 has declined in last three years (excluding 2014 statistics). Which clearly indicates that **Patient turnover rate has decreased and Detention period in ERS1 has increased.**

Table : Comparison of Outcome of Patients (Jan & March 2015)

Patient Status In ERS 1	January 2015	March 2015
Admissions	614	528
Discharges	196	175
Transfer	348	277
LAMA	26	24
Death	33	31
Refer	5	8
Brought Dead	6	2

Chart : A comparative distribution of outcome of patients



Inference: Graph Shows that after implementation of new policy regarding ERS I (i.e. ERS 1 will be considered as a Department and Patients may get admit here) percentage of patients outcome i.e .No. of admissions and discharge has been decreased.

Data also shows that number of admissions has been decreased due to non availability of beds in ERS 1 which shows reduced efficiency of ERS I.

Chart : Depicts Comparative statement of Admissions in ERS 1

Inference: Data shows number of admissions has been decreased in March 2015 in comparison with the month of January 2015 due to non availability of beds and increased detention period of patients in ERS I.

Table : Depicts Comparative statement of shift wise Patient Admissions in ERS1

Month	Morning	Evening	Night
January 2015	240	190	190
March 2015	210	156	160
Total	450	346	350

Chart : Depicts shift wise No. of Admissions in ERS 1(Jan & March 2015)

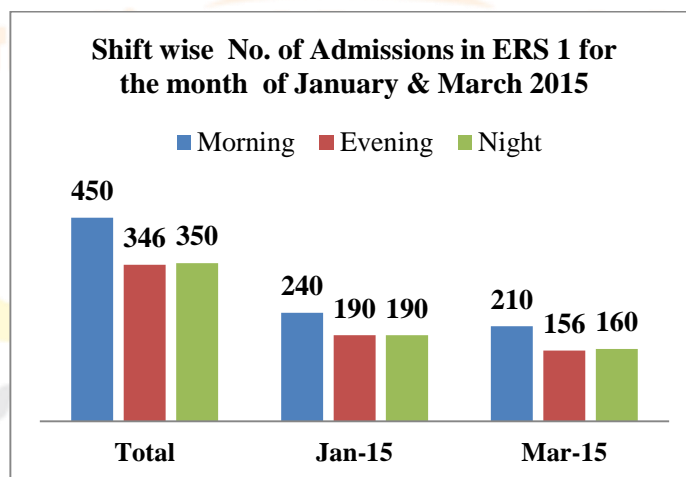
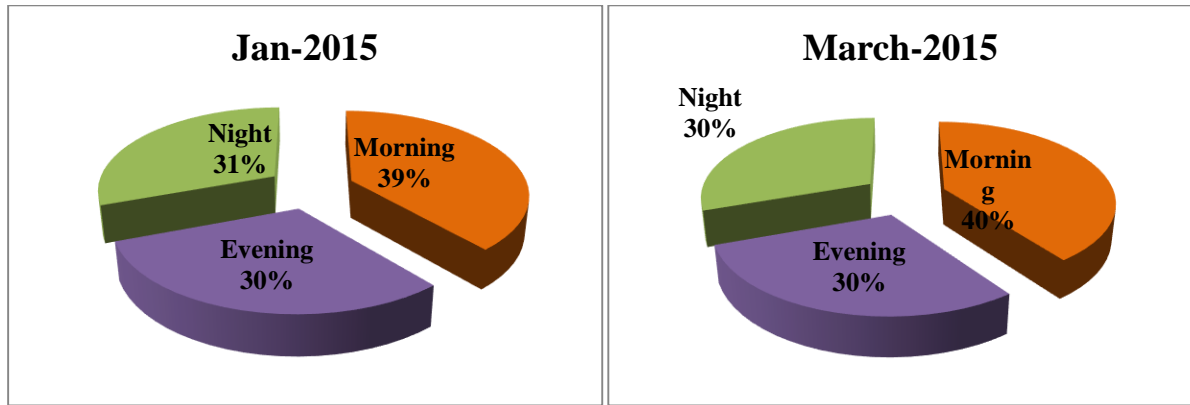


Chart No. 9 Depicts Comparative statement of Shift wise Admissions in ERS 1



Inference:

This distribution reveals that in the Morning shift patient load was maximum i.e. 40% approx. while patient load in Evening & Night shift was almost equal i.e.30% respectively for both months (Jan & March 2015).

But if we consider shifts for 12 hours, then workload is more than two times in Day hours (8:00 am to 8:00 pm) as compared to Night shift (8:00pm to 8:00 am)

Another studies done at AIIMS in the department of Hospital Administration in 1997 and 2011 revealed similar trend i.e. the workload variation between Day and Night were similar.

Table : Department wise Distribution of Patient in ERS I

Specialities	January 2015		March 2015	
	Count	%	Count	%
Cardiology	29	5%	18	3%
Nephrology	244	40%	177	34%
Pulmonary medicine	13	2%	27	5%
Gastro Medicine	150	25%	128	24%
Neuro Medicine	58	10%	36	7%
Neuro Surgery	18	3%	15	3%
Emergency receiving station (ERS I)	34	6%	29	5%
Haematology	32	5%	52	10%
Others	26	4%	46	9%

Chart No. 10 Depicts Department wise Patient Distribution in ERS I

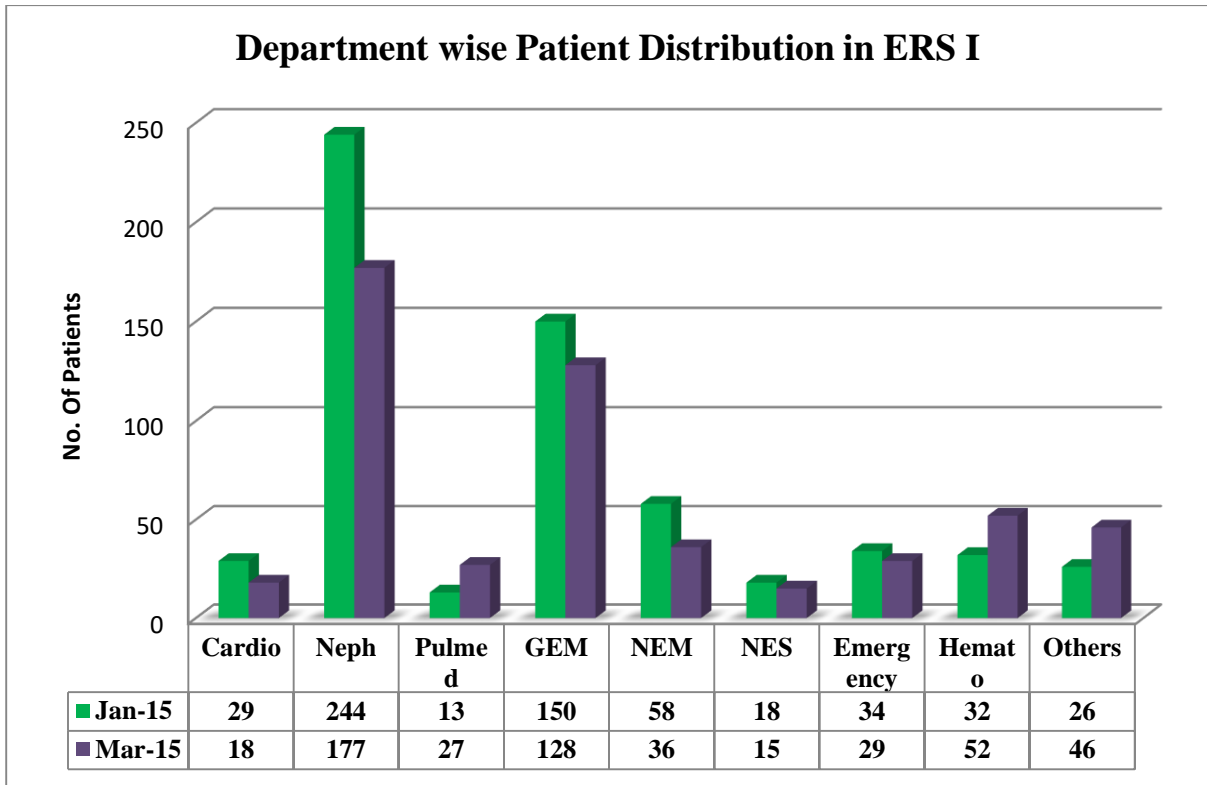
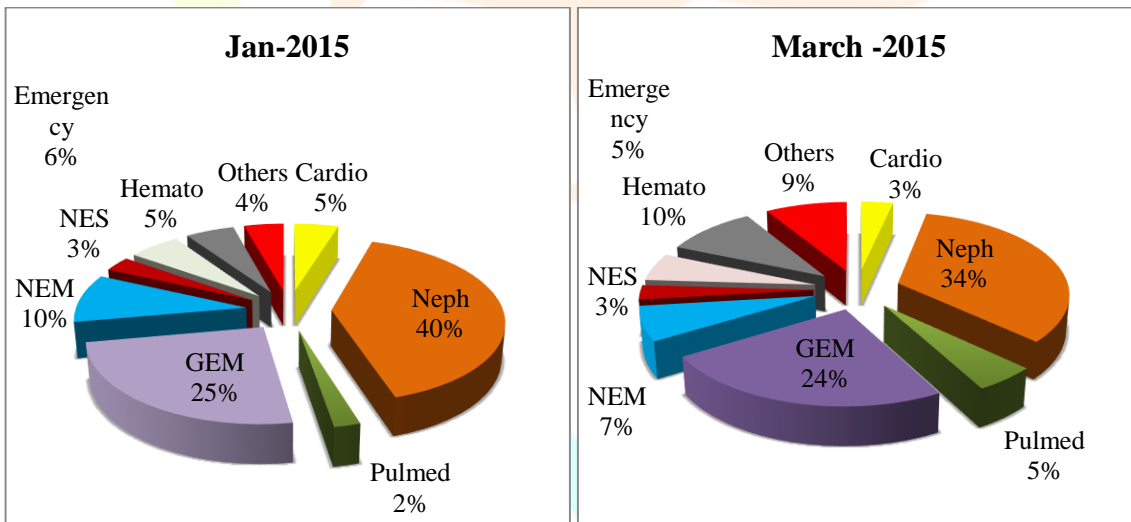


Chart no.11 Depicts percentage wise distribution of patients in ERS 1

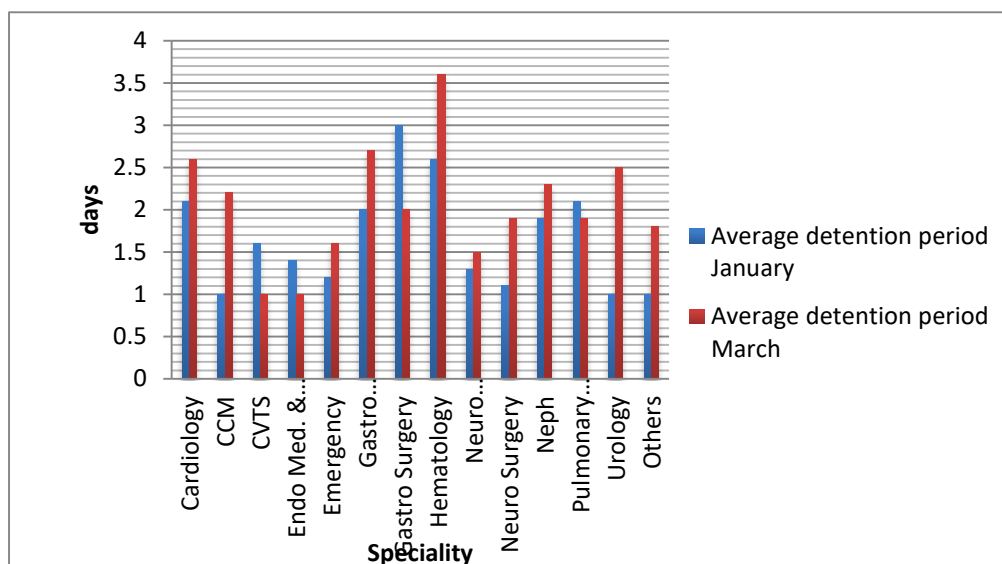


Inference:

From above chart it was observed the maximum number of patients in ERS 1 (for the month of Jan & March) were admitted in Nephrology department then Gastro Medicine & Neuro medicine respectively. While the number of patients admitted in Hematology, Cardiology, Emergency, Neuro Medicine & Surgery and others were comparatively low.

Table No.15 Speciality wise average period of Detention (In Days) in ERS 1 for the month of January & March 2015

Sr. No	Speciality	January	March
1.	Cardiology	2.1	2.6
2.	Critical Care Medicine	1	2.2
3.	CVTS	1.6	1
4.	Endo Medicine & Surgery	1.4	1
5.	Emergency	1.2	1.6
6.	Gastro Medicine	2	2.7
7.	Gastro Surgery	3	2
8.	Haematology	2.6	3.6
9.	Neuro Medicine	1.3	1.5
10.	Neuro Surgery	1.1	1.9
11.	Nephrology	1.9	2.3
12.	Pulmonary Medicine	2.1	1.9
13.	Urology	1	2.5
14.	Others	1	1.8
15.	Over all	1.8	2.4

Chart No. 12 Depicts specialty wise Avg. Detention Period for Jan & March 2015

DISCUSSION & CONCLUSION

SGPGIMS is the Nation's trendsetter in public sector hospitals. Here people's expectations are phenomenal and to come up to their expectations is a challenge for Healthcare providers as well as administrators alike. ERS concept in the tertiary care hospital was found to have a significant role in looking after the patients without affecting the referral nature of the hospital.

The major limitation of this study was since Emergency Services in SGPGIMS is not a full fledged department since SGPGIMS being a tertiary care hospital & was functioning with the philosophy of not to encourage emergency patients but later on started with limited facilities.

The first and second objective of this study was to study the Emergency Receiving station from the perspective of Input, Process, Output. These objectives will be achieved through this segment. The overall percentage of compliance calculated from the purview of input & process was 68.98%. While percentage compliance across Input Indicators was 69.06%. & for process Indicators was about 68.75%.

The third objective of this study was to study Gap Analysis which will be achieved through this segment. There is a Gap of about 31% in the overall compliance of ERS 1. Numerically speaking there is also a Gap of about 30.94% in Input Indicators & Gap of 31.25% for process Indicators.

Average work load was 26 patients/ day (year 2013) which is now decreased to 19 patients/ day. But the magnitude of illness of patients keep the ERS heavy & busy.

Before the introduction of H.I.S. the avg. detention period was 1.8 days (for the month of January) which has increased to 2.4 days (for the month of March) resulting in decreased number of admissions i.e. 614 admissions in Jan to 528 admissions in March.

It was observed that avg. detention period has increased & bed turnover rate has decreased which resulted in decreased number of Admissions, especially after the introduction of new admission policy through computerized Hospital Information system (HIS) in ERS.

RECOMMENDATIONS

SGPGIMS is becoming a victim of its own success with the growing numbers of referrals in ERS. There is a need to spell out a homogenous policy of dealing with emergencies evolve a consensus on it, and allocate a proportion of each department's resources and time to emergencies. Increasing the number of beds is only a temporary respite, as the increase will soon fall short. Also, accommodating all patients who come to ERS, within the existing departments are commensurately enhanced. Therefore as per definition, the beds to be utilized for patients having acute illness, rather chronic illness patients are occupying the berth for a long time.

The following recommendations are suggested on the basis of conclusion of this study-

- A) Can be used as a baseline study for the formulation and implementation of quality assurance program in Emergency receiving station (ERS-1) of SGPGIMS, Lko.
- B) The Major Problems that were attributed as per observations made were:
 - Overcrowding & Confusion at the main entrance of Hospital building.
 - Lack of a system which can correctly guide the patients & attendants according to needful.
 - Maintenance of unidirectional flow in ERS.
- C) The need for documentation is stressed across all the parameters even though there is busy schedule of the staff. This Documentation would be a permanent record for future.
- D) The Resident Doctor of the concerned department should attend and evaluate the patient at the earliest. At present this is also one of the reasons for delay due to paucity of SR.
- E) Needles and sharp management protocol must be identified & effective implementation must be ensured.
- F) Fire Exit signage must be clearly displayed and should glow in night.
- G) Trained Medical Social Worker should be appointed round the clock to guide & counsel patient's attendant. Presently their compliance towards assisting patient attendant is suboptimal. Security Guard on duty provide assistance to attendants.
- H) Public addresser system should be introduced to inform the patients & attendant.

D) Standard Operating Procedures for Emergency department should be adhered to department notice board, as the staff in emergency is unaware of them.

J) Lack of space and patient overload is the major problem of ERS presently. Expansion in No. of beds is recommended. Although this is not possible in present scenario.

To overcome from this situation newly built Trauma centre of SGPGIMS should have to be operational soon.

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