ORIGINAL ARTICLE

Impact of Triage System Implementation in Fatima Memorial HospitalEmergency Department

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ABSTRACT

Aim: To assess the impact of Triage system on patients (a) Waiting for examination and treatment (b) Total stay of patient in Emergency Room (ER) and(c).patient satisfaction about redressal of their problems.
Methods: It was a retrospective observational study. Data was consulted from the patient record, three hundred (300) cases were included on each arm of the date of implementation of the triage system in emergency department of Fatima Memorial Hospital Lahore. All adults (>15 years) were included except the pronounced dead cases before arrival.The data of (a) waiting time i.e. time from the registration to the time of examination commenced by the doctor.(b) Length of stay of patient in emergency department and (c) patient satisfaction
Results: Triage system resulted in remarkable reduction in time taken for the patients to waitfor his treatment and total time of his stay in ER.(p. <0.01) Waiting time was properly distributed among critical and non-critical patients. Although waiting time of non-critical cases was relatively longer, the average time was reduced and the satisfaction of both critical and non-critical cases improved from 53.33% to 84% as regards to redressal of their problems.(p.<0.001).
Conclusion: Although it was early phase of introduction of this system and it was facing many obstacles like shortage of staff, lack of proper skill of staff and insufficient area of emergency department, the triage system yielded significant predictable results in achieving better treatment satisfaction in shorter time. The need of time is to adopt this system in our emergency departments and to improve it by proper interventions like making some amendments,process re-devising and proper training of the staff. By which we may be able to facilitate the hospital for their own as well as patient satisfaction.
Key words: Emergency department, waiting time, triage.

INTRODUCTION

Triage means quickly sorting out of the depth of problem for prioritization of patients coming in Emergency Departments (ED). The concept of this system evolved from the Clerk “Eye balling” patient in 1950 and progressed to spot check and proper comprehensive process by trained nurses till 1990[1].Triaging facilitates detection of most urgent cases for timely treatment in pressured environment due to lower resources in emergency department[2]. Later this two-tiered system was modified to 3Level (emergent, urgent, non-urgent) and 4-5 Level triage systems. 5Levelsystem was studied in Canada. In 2007, Society of Rural Physicians of Canada developed a process of 5 level acuity system, in which trained nurses were given the role Canadian Emergency Department Triage and Acuity Scale (CTAS) Level 5. In borderline cases where they were unsure, nurse and physician determine on telephonic consultation. It was aimed to optimize the use of limited physician resources. Society of Rural Physicians of Canada, however felt need of further research due to wide variation of triage levels in Canada[3].

In 2008, a comparative study of 1-4 Level Italian triage system and newly modified 1-4 Level Triage Emergency Method (TEM) was performed. It was observed as similar triage reliability of nurses in TEM with only 5-hour training, to the well trained nurses with refresher courses in old 1-4Level system, reflecting better reliability and validity of TEM than old one[4].By exercising Manchester Triage System in Australian ED, it was found that Australian nurses worked better in this system as compared to their own[5]. Triage, not only benefits to the patients but is also an effective tool of monitoring and evaluationfor the organization.Many countries devised their own standards. Now it is felt to develop an International triage scale with collaboration[6].

Studies were also conducted to assess the reliability of nurse’s decision power which varied widely. In Sweden, the accuracy of their decision slightly exceeded 50%. It was better in lower level triage systems as compared to the higher level systems[7], while in South Eastern tertiary emergency departments, it was observed that nurses triaged more accurately in 5 level systems as compared to 3 level systems[8].

In Pakistan very little work is done on triage and it has just been introduced. Rising level of crowding and disasters could be easily handled by this technique[9]. In DHQ Hospital Timergara, Pakistan, it was revealed that nurses in Pakistan could easily implement the South African Triage Scale (SATS)[10]. It is imperative to work on triage system in emergency departments of tertiary care facilities. Fatima Memorial Hospital is a tertiary level hospital with a round the clock running emergency 3 level Triage system wasapplied in Central Emergency Department(CED) on Jan. 1st 2017. It was necessary to evaluate the system effectiveness and benefits of this system, so this study was applied.

MATERIAL AND METHODS

Study was conducted in Fatima Memorial Hospital Emergency Department, Lahore, Pakistan, a 510 bedded multispecialty tertiary care teaching hospital. Data was taken retrospectively, of 300 cases in each side of the

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system application i.e. Jan. 1st 2017. These controlswere matched based on demographics and disease severity.All adult (>15 years) patients presenting to FMHEmergency Department were includedin the study. Patients pronounced deadbefore arrival to hospital were excluded.Triage protocol implemented at Fatima Memorial Hospital was on Triage acuity scale. Due to shortage of nurses, the triage responsibility was given to the doctors.

Variables:

Waiting time: The time (in minutes) taken from registration to the time of examination by the doctor.

Length of stay: Time (in minutes) taken from the registration to the time of discharge or admission to the concerned department.

Patient Satisfaction: It is taken from a two-point Likert scale column in the record for the patient/ attendants. 1-satisfied2- un-satisfied.

Data analysis: Length of stay, and waiting time will be reported as Mean±SD or Median & IQR depending upon the distribution of the variable. Analysis of length of stay was done by t tests.All analysis was done using Stata 14. Theindependent sample by two-tailed t test, to compare the before and after implementation data. The levelof significance was< 0.05.While z-test was applied to compare two proportions of satisfaction.

RESULTS

Gender / Age Wise Distribution of Patients

Groups	Gender				Age			
	Male		Female		Male		Female	
	Freq.	%age	Freq.	%age	Median	IQR	Median	IQR
Group I	141	47	159	53	37	21-55	35	20-56
Group II	135	45	165	55				

Distribution of Variables

Waiting Time

Group I	Group II	Percentage of Reduction of mean waiting time	Significance
Mean±SD	Mean±SD		
10.69±3.79	8.91±3.77	16.65%	<0.01

Length of Stay

Group I			Group II			Significance
25th Percentile	Median	75thPercentile	25th Percentile	Median	75thPercentile	
137	219	320	110	185	266	<0.01

Satisfaction

Group I				Group II				Significance
No.of patient	Satisfied	unsatisfied	%	No.of patient	Satisfied	unsatisfied	%	
300	160	140	53.33%	300	252	48	84%	<0.001

DISCUSSION

The decline in the waiting timeinterval for critically ill patients presenting to an ED is the pivotal reason for the application of triage systems across the globe. This study illustratesthat the sudden decrease in waiting time that was acquiredby applying the triage system, was remarkable. This study also signifies that there was a sharp difference in waiting time, length of stay andpatient's satisfaction before and after the introduction of triage system.The waiting time reduction varied widely. In this study there was reduction of 16.65%, which is better than 4% reduction in an Australian hospital ED[2]. While on other hand, South African ED results were much higher i.e. >38%[11]. Globally the trained nurses are working at triage area, while in this study doctors were deputed for triage that is why the results were so impressive in spite of limited resources and trainingin FMH Lahore. This is consistent with a study in Alexandra hospital where waiting time was further reduced from 35.5 minutes to 19 minutes when nurses worked with physician than alone ($p < 0.05$)[12]. According to Thompson et al[13], triagehas limited role through reducingwaiting time alone, but it improves the patient satisfaction by providing information and expressive quality as a whole, (p. <0.001) which is quite comparable to our satisfaction rate (p. <0.001).

Assessment of triage function in ED demonstrates that both waiting time and increased patient burden could be declined after addition of a triage system in ED. This studyonly glanced at the affectivity of triage system on waiting times, length of stay and patient's satisfaction.

Other variables that may have an effect, include:total attending medical staff and their training; perceptivity of the patient seen; total influx of patients; delays in shifting of patient and delays in laboratory results;both contributing to overcrowding. Detailed study is necessary to analyze whether overcrowding could be further decreased by minimizing the impact of these above mentioned factors.

Emergency medicine is a recently evolved medical specialty in Pakistan with the aim of providing management of unexpected illness and injury round the clock. This study is an early phase of evaluation of triage system in Pakistan. In-spite of limited resources and skills, this study innovated the application of triage system all over the tertiary care emergencies for better coping up of rising crowds of emergency cases coming in ER, and to do further studies for evaluation and improvements.

Limitations: There are some limitations which have to be further analyzed. First of all, the information gives the details of only one institution, which may compromise the ability to generalize our findings to other healthcare institutions. We also had limited healthcare service providers in the ER. The fast-paced and tense-working environment would have suffered the triaging and management of the patients.

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