Increased Response Time and Triage Accuracy with Resetting of Systems and Spatial in a Hospital Emergency Room

Peningkatan Waktu Tanggap dan Ketepatan Triage dengan Pengaturan Ulang Sistem dan Tata Ruang di Instalasi Gawat Darurat (IGD) Rumah Sakit

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ABSTRACT

The triage system in the emergency room is crucial for categorizing patients based on the level of emergency and finding out further medical services for the patients. An accurate triage system will accelerate the IGD response time and result in better ER quality. The purpose of this study was to determine the factors influencing the accuracy of the triage location in the Emergency Room of a type C hospital as well as the relationship between the activation of the triage area and the emergency response time. The sample consisted of 30 patients before and 30 patients after the activation of the triage area. According to the priority level, the sample was then divided into ten patients each. This research used field experimental design with a Participatory Action Research approach. The results showed that the accuracy of the triage implementation in the Emergency Room of this hospital was influenced by the facilities and infrastructure, human resources, and the flow of patients in the emergency room. Based on the Wilcoxon test, there is an increase in P1 and P3 patient response time before and after triage activation but not significant. The increase in response time in P2 patients before and after the activation of the triage area is significant with p-value <0.046. This study concludes that the right triage system can increase emergency response time.

Keywords: Accuracy, emergency room, response time, triage

ABSTRAK

Sistem triage di IGD sangat penting dilakukan untuk pengelompokkan pasien berdasarkan tingkat kegawatannya dan untuk mengetahui layanan medis yang selanjutnya yang akan diberikan pada pasien. Sistem triage yang tepat akan menyebabkan response time IGD menjadi lebih cepat sehingga mutu dan kualitas IGD semakin baik. Tujuan dari penelitian ini adalah untuk mengetahui faktor-faktor apa saja yang mempengaruhi ketepatan penempatan triage di IGD disebabkan rumah sakit tipe C serta hubungan pengaktifan area triage terhadap peningkatan response time IGD RS X. Sampel berjumlah 30 pasien sebelum dan 30 pasien sesudah pengaktifan area triage yang terbagi masing-masing 10 pasien sesuai tingkat prioritasnya. Desain penelitian yang digunakan adalah field experimental dengan pendekatan Participatory Action Research. Hasil penelitian menunjukkan ketepatan pelaksanaan triage di rumah sakit ini dipengaruhi oleh ada tidaknya sarana dan prasarana, sumber daya manusia dan alur pasien masuk IGD. Berdasarkan uji Wilcoxon didapatkan peningkatan response time pasien P1 dan P3 sebelum dan sesudah aktifasi triage ada namun tidak terlalu signifikan. Peningkatan response time pada pasien P2 sebelum dan sesudah pengaktifan area triage sangat signifikan dengan nilai p=<0,046. Kesimpulan dari penelitian ini adalah sistem triage yang tepat dapat meningkatkan response time IGD.

Kata Kunci: IGD, ketepatan, response time, triage

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INTRODUCTION

Emergency Room (ER) is one of the important installations in a hospital. The dynamic nature of the medical staff and health workers who are in charge in the emergency room is expected to be able to handle all patients’ conditions regardless of the emergency level (1). Patients who come to the emergency room are not only emergency patients but also stable and non-emergency patients. This condition sometimes makes ER overcrowded (2). Therefore, patient management and triage system are needed so that the quality of emergency services remains good and maintained (3).

Triage is the process of categorizing and clustering patients according to their emergency (4). The level of emergence of the patients is assessing patient awareness status, and whether there are airway obstruction, respiratory disturbances, and circulatory disorders (1). The triage system is critical to reducing the mortality rate and also patient frailty (5), and proper triage will speed up the response time of the patient (6), which significantly affects the satisfaction of patients and their families (7).

The implementation of triage is influenced by several points, including training (8), nurse work experience, patient characteristics, and the availability of facilities needed (4).

The hospital where the study was conducted has provided a triage area in front of the emergency room entrance, but in reality, the triage area has not been used optimally. Based on the observation, patients came directly to the emergency room without going through the triage area first. This background causes triage accuracy at the hospital flawed. Therefore, this research aimed to identify the factors that influence the accuracy of triage placement and to compare the patient’s response time before and after triage area activation.

METHOD

This study is quantitative research with an experimental approach. There were two groups, the control group was patients before activated triage while the intervention group was patients after activated triage. The researcher analyzed and engaged the team of related units, namely the ER doctors, ER nurses, and the director in activating the triage area. The steps taken included discussion to find the constraints and limitations and to find join solutions to prepare infrastructure and human resources needed to activate the triage area at the ER of X Hospital.

This activation was carried out by arranging the triage area with the necessary set-up. It included preparing one bed to examine the patient, one wheelchair, one table for the triage officer, three chairs for the triage officer and the patients, and one computer unit for the Hospital Management Information System, hand rub, and instruments to measure the patient’s vital signs. After the required set-ups were available, the researcher then prepared a simulation for nurses and emergency room doctors about the flow of patients in the emergency room and how to briefly perform anamneses and physical examination and classify the patients into priority areas according to the patient’s condition and needs.

After activating the triage area, the researchers made observations to compare the ER response time before and after the implementation to determine the impact and effectiveness of the interventions carried out. The samples were 30 patients before the intervention and 30 patients after the intervention. Those 30 patients consisted of 10 patients with Priority 1 category (P1), ten patients with Priority 2 category (P2), and ten patients with Priority 3 category (P3). The response time was measured from the patient arrival time at registration until the time the patient was handled by the health worker as recorded on the emergency resume. Samples in the group before the intervention were grouped into P1, P2, P3 by the researchers based on the presence or absence of interference with the airway, breathing, circulation of the patient. While the classifications of P1, P2, and P3 in the group after the triage area has been activated were done by the existing triage officer. Then before and after intervention results were compared. A normality test was then carried out to the observation results and followed by a Wilcoxon statistical test to measure the significance of the ER response time before and after the triage area was activated.

RESULTS

The intervention increases the quality of health services, systems and facilities in ER. The intervention can improve both of triage accuracy and response time. Where the response time for P1, P2 and P3 patient after intervention can be faster than before intervention.

Facilities and Infrastructure

The direct changes of the result from the activation of the triage area are the availability of facilities and infrastructure in the triage area following the Technical Guidelines for the Emergency Room Hospital Building by the Indonesian Ministry of Health in 2012 (9). The triage area that previously did not have any bed, wheelchair, and devices for vital sign examination was completed with the intervention facilities and ready for use.
Human Resources

Before the triage area was activated, the nurses on duty were in charge in the emergency room. There were no nurses on duty as triage officers because of the limited number of nurses. The absence of a triage officer impacted the flow of patients into the emergency room, and as a result, patients would come directly into the emergency room. This absence causes inaccuracy of triage placement. However, the addition of 2 other nurses since October 2019 has helped in reactivating the triage area. The additional number of emergency nurses made it easier to distribute nurses on duty in one shift by assigning one nurse as a triage nurse.

Response Time

Response time data before and after activating the triage area were compared so that the differences in response time before and after activating the triage area could be obtained. The difference in average response time before and after activating the triage area according to the priority area is illustrated in Table 1.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Pre (seconds)</th>
<th>Post (seconds)</th>
<th>P</th>
<th>Standard (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>96</td>
<td>72</td>
<td>0.102</td>
<td>0</td>
</tr>
<tr>
<td>P2</td>
<td>162</td>
<td>84</td>
<td>0.046</td>
<td>&lt;300</td>
</tr>
<tr>
<td>P3</td>
<td>180</td>
<td>108</td>
<td>0.065</td>
<td>&lt;3600</td>
</tr>
</tbody>
</table>

The Wilcoxon test revealed that the differences in response time P1 and P3 before and after activation of triage are not significant, but the differences in response time on P2 before and after activating the triage area are very significant. The response time, according to the standard, is below 300 seconds in P2 patients and below 3600 seconds in P3 patients.

DISCUSSION

Overall, the intervention can increase the response time in ER. In addition to increasing response time, this study reveals that factors influencing the accuracy of the placement of triage in the Emergency Room of this hospital are inadequate facilities and infrastructure in the triage area, lack of human resources (the number of nurses), and the patient flow in the emergency room.

Though the response time in all priority is increased, the results of this study indicate that the increase in response time in the P1 area after activating the triage area is insignificant. It is because patients with emergency conditions do not need to come to the triage area for anamneses and short examinations, but they can directly be taken to the P1 area for resuscitation. In contrast to P1 patients, the difference in response time on P2 showed significant results. Since the P2 area is a gray area, the patient may appear healthy on arrival but seems to have a disturbance in his circulation and can be quickly detected when checking the vital signs in the triage area, which is then directed towards the P2 area.

The accuracy of this triage placement makes it easier for medical staff to recognize which cases are emergency and non-emergency. This result is in line with the previous research that states there is a relationship between the patient’s emergency level and response time. The patient will sooner get the help needed if the emergency of the patient is detected earlier. The response time after activating triage in P3 patients is also insignificant. This is because the number of patients who come to the emergency room of X Hospital has been low. P3 patients must queue and will be examined by medical personnel if...
the P1 and P2 patients are finished. The number of patients in the Emergency Room of this hospital is low, which causes an insignificant difference in response time of P3 patients after the intervention.

It should be noted that the patient arrival time in this study was recorded based on the time written on the patient registration sheet. This is not entirely accurate because patients sometimes come directly to meet with triage officers, and the registrants are the patient’s family. The recording of assessment start time written on the patient’s medical record in the emergency room sometimes does not match the actual time. Furthermore, the clock setting at the registration is sometimes different from the clock setting used by the care provider who handles the patient. Under these conditions, further research should measure the response time better and apply more accurate methods.

REFERENCES


