Factors Contributing to Length of Stay Prolongation among Emergency Room Patients during the Covid-19 Pandemic: A Study at Persada Hospital

Faktor yang Berperan dalam Pemanjangan Length of Stay Pasien IGD di Masa Pandemi Covid-19: Studi pada Persada Hospital

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ABSTRACT

Extended length of stay (LOS) in the Emergency Department (ED) results in crowding, potentially causing adverse events and patient dissatisfaction. The Covid-19 pandemic has forced hospitals to implement screening procedures that can extend the LOS of patients in the ED. This study aimed to provide an overview of changes in ED LOS during the pandemic and its contributing factors. This study used a descriptive approach through observation and interviews. LOS observations were conducted using the time & motion study method to determine the average time in each ED stage. The observation results identified the differences in the average LOS during the Covid-19 pandemic, which was 2 hours 39 minutes 52 seconds, and the longest time was on laboratory examination (2 hours 59 minutes 27 seconds). A lengthy laboratory examination duration is due to the additional laboratory examination procedure (serology) for SARS COV-2, suboptimal screening team, and the absence of notification in the hospital information system.

Keywords: Covid-19, emergency room, laboratory, length of stay, time and motion study

ABSTRAK


Kata Kunci: Covid-19, Instalasi Gawat Darurat, waktu tunggu

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INTRODUCTION

Emergency Department (ED) is a critical facility in the hospital since ED is the hospital's frontline to respond to the need for health services of the public that requires immediate treatment (1). Patient deaths, which often occur within 24 hours of patient admission, can be prevented if health personnel acts immediately and starts the treatment process after the patient arrives at the health facility. The implementation of triage and a short length of stay (LOS) in the ED has an influential role in preventing death (2,3).

Globally, patients' length of stay in the ED has been a concern due to its impact on patient safety and satisfaction (4). Each patient's LOS is measured from the patient's initial arrival to the transfer to the other department, and it is used as a key to assessing the efficiency of improving management and clinical performance (5). From a managerial point of view, prolonged LOS can reduce patient satisfaction levels. On the clinical side, prolonged LOS has contributed to service delays, which can reduce patient safety or even cause death (6). Long waiting time or prolonged LOS in the ED indicates a low quality of service in a hospital (7). The Joint Commission Accreditation recommends that emergency services should not exceed four hours (8).

Currently, the whole world is facing the Corona Virus Disease (Covid-19) pandemic that directly impacts hospital services. Until recently, the prevalence rate has reached more than 183 million people and has caused almost 4 million deaths (9). Covid-19 can be transmitted through liquids (droplets), respiratory tract, indirect contact, and air (airborne transmissions), thus causing very fast transmission (10,11). The ease of transmission of this disease has forced hospitals to change procedures for receiving and handling patients in hospitals, especially in the ED, by adding procedures in the form of Covid-19 screening (12). One of the screenings carried out is the SARS COV-2 laboratory examination that takes up to three hours, so the patient's LOS is potentially prolonged in the ED (13).

Persada Hospital, a private hospital that provides health services in Malang City, has also made some service adjustments or adaptations. Based on hospital quality indicators related to customer complaint reports, the number of complaints about waiting time in the ED is increasing. Long waiting time can compromise patient safety. This study aimed to provide an overview of changes in LOS during the pandemic and identify the factors that cause the prolonged length of stay of ED patients. The study results are expected to add evidence from the case study and serve as a basis for hospitals in designing strategies to deal with the long-term Covid-19 pandemic.

METHOD

This study was conducted at the Emergency Department of Persada Hospital in August 2020 using a descriptive approach based on medical record data and observations. From medical record data in 2019 consisting of 100 patients, 16 patients were selected as the research sample, comprising 10 inpatients and 6 outpatients. The researchers did direct observations and recorded the duration of each emergency service activity, starting from the patient’s arrival, entering the registration and triage clinic, and being referred to the other service unit using a stopwatch. From a total of 99 patients, 21 patients were taken as the sample, consisting of 17 inpatients and 4 outpatients. Observations were made on three different shifts on each day of observation. There were 5 inpatients as respondents in the observation on September 29 (night shift), 6 inpatients and 2 outpatients on October 1 (afternoon shift), and 6 inpatients and 2 outpatients on October 2 (morning shift). A comparison of the LOS of patients before the pandemic (medical record data in 2019) and during the Covid-19 pandemic was carried out in selected case samples.

<table>
<thead>
<tr>
<th>No</th>
<th>Diagnosis</th>
<th>Before Covid-19 Total Duration</th>
<th>During Covid-19 Pandemic Total Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atherosclerotic heart disease</td>
<td>01:30:00</td>
<td>Atherosclerotic heart disease, heart failure unspecified 04:41:11</td>
</tr>
<tr>
<td>2.</td>
<td>Atherosclerotic heart disease</td>
<td>02:07:00</td>
<td>Atherosclerotic heart disease, heart failure unspecified 05:02:43</td>
</tr>
<tr>
<td>3.</td>
<td>Atherosclerotic heart disease</td>
<td>01:30:00</td>
<td>Atherosclerotic heart disease, heart failure unspecified 05:36:59</td>
</tr>
<tr>
<td>4.</td>
<td>Atherosclerotic heart disease</td>
<td>02:07:00</td>
<td>Atherosclerotic heart disease, heart failure unspecified 04:55:52</td>
</tr>
<tr>
<td>5.</td>
<td>Atherosclerotic heart disease</td>
<td>00:50:00</td>
<td>Atherosclerotic heart disease, heart failure unspecified 05:08:10</td>
</tr>
<tr>
<td>6.</td>
<td>Atherosclerotic heart disease</td>
<td>02:14:00</td>
<td>Atherosclerotic heart disease, heart failure unspecified 06:11:41</td>
</tr>
<tr>
<td>7.</td>
<td>Fever, unspecified</td>
<td>02:26:00</td>
<td>Atherosclerotic heart disease, heart failure unspecified 05:46:05</td>
</tr>
<tr>
<td>8.</td>
<td>Fever, unspecified</td>
<td>00:50:00</td>
<td>Chest pain, unspecified 03:06:09</td>
</tr>
<tr>
<td>9.</td>
<td>Fever, unspecified</td>
<td>02:26:00</td>
<td>Burn of second degree of hip and lower limb, except ankle and foot 04:44:04</td>
</tr>
<tr>
<td>10.</td>
<td>Malignant neoplasm of endometrium</td>
<td>02:47:00</td>
<td>Malignant neoplasm of cervix uteri, unspecified 03:15:31</td>
</tr>
<tr>
<td>11.</td>
<td>Nausea and vomiting</td>
<td>03:01:00</td>
<td>Corns and callosities 03:22:07</td>
</tr>
<tr>
<td>12.</td>
<td>Malaise and fatigue</td>
<td>02:13:00</td>
<td>Gastroenteritis and colitis of unspecified origin 06:07:05</td>
</tr>
<tr>
<td>13.</td>
<td>Malaise and fatigue</td>
<td>02:13:00</td>
<td>Mental disorders and disease of the nervous system complicating pregnancy, childbirth, and the puerperium 05:18:47</td>
</tr>
<tr>
<td>14.</td>
<td>Non-insulin-dependent diabetes mellitus with peripheral circulatory complications</td>
<td>03:15:00</td>
<td>Observation for suspected nervous system disorder 03:36:56</td>
</tr>
<tr>
<td>15.</td>
<td></td>
<td></td>
<td>Anemia, unspecified 05:07:47</td>
</tr>
<tr>
<td>16.</td>
<td>Unspecified contact dermatitis due to other agents</td>
<td></td>
<td>04:32:22</td>
</tr>
<tr>
<td>17.</td>
<td></td>
<td></td>
<td>Dizziness and dizziness 04:43:17</td>
</tr>
</tbody>
</table>

Average Length of Stay of ED Patients (Before the Covid-19 Pandemic) 02:07:00

Average Length of Stay of ED Patients (During the Covid-19 Pandemic) 04:46:52

Source: ED time-motion study, 2020
RESULTS

The results of the time-motion study analysis show that during the pandemic, the average LOS of ED patients who will be hospitalized is 4 hours 46 minutes 52 seconds. The longest time required is in the cases of atherosclerotic heart disease (5 hours 20 minutes 23 seconds). This duration is longer than before the Covid-19 pandemic, which was 2 hours 7 minutes with a time difference (2 hours 33 minutes 52 seconds). The activities of outpatients in the ED also show the time difference between before and after the Covid-19 pandemic. The average time needed by outpatients in the ED in 2019 was shorter (1 hour 14 minutes) than the observation results in 2020 (1 hour 59 minutes and 57 seconds) with a gap of 45 minutes 57 seconds.

Table 3 shows that the longest waiting time is waiting for laboratory results (2 hours 59 minutes 27 seconds). The results of the time-motion study analysis show that the patient’s family registers in the ED also show the time difference between before and after the Covid-19 pandemic. Patients (Before the Covid-19 Pandemic) average Length of Stay of ED Patients (Before the Covid-19 Pandemic) was 2.6-4.7 hours (4), as well as a study in Yogyakarta that 39.8% LOS occurred in more than 4 hours (17).

Table 3 shows that the longest waiting time is waiting for laboratory results (2 hours 59 minutes 27 seconds). Studies in the laboratory department showed that the prolongation was due to the addition of SARS-CoV serology examination, which has become the standard for patients undergoing hospitalization at Persada Hospital during the pandemic. Several factors affecting the delay in the process in the laboratory were 1) the centrifuge process in the serologic examination separation process for the SARS-CoV2 antibody test that takes approximately 2 hours and 2) the rearrangement of the emergency room and the laboratory due to the Covid-19 pandemic that has made the emergency room and laboratory separated by a building. In addition, there was no notification of the examination results in the Hospital Management Information System, so the emergency room staff had to check the finished results manually. The other contributing factor is the addition of a screening system that is the approval from the Covid screening team before hospitalization, which adds 14 minutes 13 seconds.

DISCUSSION

The results show that LOS in the ED during the Covid-19 pandemic among patients undergoing hospitalization is twice longer. The longest process is in the laboratory examination due to the additional procedure for examining the SARS-CoV2 antibody using ECLIA and the approval of the doctor in charge for hospitalization. Although the LOS difference was shorter (45 minutes), it showed 30% LOS prolongation in outpatient ED patients. The duration of the ED LOS is a problem that often occurs in hospitals in Indonesia and overseas (4, 14-16). Research in hospitals in Taiwan showed that the average LOS in Taiwan hospitals was 2.6-4.7 hours (4), as well as a study in Yogyakarta that 39.8% LOS occurred in more than 4 hours (17).

Length of Stay (LOS) prolongation becomes a concern because it has impacts on patients and hospitals. Patients perceive LOS prolongation or long waiting time as barriers to obtaining proper care. In addition, the long waiting time also causes tension in the workforce in the hospital and can disrupt the service rhythm, the number of patients, and reputation in public (2). LOS prolongation in the ED is also associated with increased mortality and morbidity. There is an increase in mortality from 2.5% to 4.5% in patients discharged from the ED after 12 hours or more (6).

This study identifies that the longest time in the ED LOS is the time needed for laboratory examinations due to the additional SARS-CoV2 antibody test. Antibody tests must be carried out due to management policies in Covid-19 screening, which are considered more accurate. Laboratory and other supporting examinations are often the main problems in LOS prolongation. Research in Saudi Arabia showed that 88.8% of the prolonged time in the ED was due to delays in laboratory examinations (16). Response and emergency laboratory waiting times for 656 patients in Australian hospitals show that an average waiting time to receive laboratory test results is 66
minutes (15). In addition, several studies have also shown that reducing time in laboratory tests in the emergency department has a significant impact on reducing overall patient waiting time (14,18,19). One of the reasons for the delay in response and preparation of test results in this study is the absence of a separate laboratory in the ED. An increase in the workload of emergency personnel can reduce or delay the delivery of emergency patient samples and the technical problems that occur in sample handling (20). In this study, the sample centrifuge process took up to 2 hours, and the laboratory was moved to a building separated from the emergency room.

This study found an approximately 14-minute extra time needed to wait for the decision of the doctor in charge of the of the Covid-19 screening results. Research in Iran showed that the waiting time for a consultation with a specialist is 99.3±32.8 minutes (95% CI: 34.9, 163.6), which is much longer than the findings of this study. Consultations between doctors in the ED and specialists require quite a long waiting time because the specialists are not in the ED, so it takes longer (20). Although only 14 minutes, the addition of this process is likely to affect patient satisfaction.

Although still longer than before the pandemic, the waiting time for ED patients who do not require hospitalization is shorter than those needing hospitalization. Patients with an acute condition and requiring multiple interventions have a longer duration than those with severity (21). For ED patients who do not require hospitalization, they do not require an extended observation so they just require a shorter time in the ED. However, during this Covid-19 pandemic, it is still necessary for Covid-19 screening as a safety measure for both medical staff at hospitals and patients, even without performing SARS CoV2 antibody tests.

The addition of the Covid-19 screening (laboratory examination and verification) process as a preventive effort in hospitals impacts the prolonging ED LOS, which can cause accessibility barriers. The management needs to establish an alternative Covid-19 examination policy for emergency room patients, especially those with an inpatient plan, making SOPs for handling emergency room patients during the Covid-19 pandemic. Process efficiency can be done by making a clear division of tasks for the verification process and developing notifications on the hospital information management system to speed up information delivery on examination results.

REFERENCE


