

Original Article

Characteristics of referred patients to the Emergency Department in Aceh before COVID-19 pandemic

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Abstract

As an important entry point for referral patients, the management of the Emergency Department to care and implement the best possible treatment are required. The Emergency Department of provincial hospital plays a vital role as a referral hospital of all district-level hospitals to provide initial treatment for a broad spectrum of illnesses and injuries. In Aceh, many referral issues were encountered at the Emergency Department of Dr. Zainoel Abidin Hospital, which categorized the referral patient's condition that was considered to improve clinical care to patients referred. This quantitative study aims to determine the characteristics of patient referral and the referral issues encountered at the Emergency Department of Dr. Zainoel Abidin. In total, 1674 patients were recruited using the purposive sampling method from April to June 2019. The results showed that most referral patients arrived at the Dr. Zainoel Abidin Hospital emergency room during the night and very few arrived in the morning. Most patients arriving at the Emergency Department of Dr. Zainoel Abidin Hospital at night were from Aceh Singkil and Gayo Lues. Meanwhile, patients from Aceh Besar, Aceh Jaya, Banda Aceh, Pidie, and Pidie Jaya mostly arrived at the Emergency Department Dr. Zainoel Abidin Hospital during the afternoon. Most patients from Sabang and Simeulu came in the morning. The most commonly referred patients were adult and elderly patients, aged 46-65 years. Most of the patients had been treated in the daycare unit at the previous hospitals with the longest hospital stay was 36 days before being referred to Dr. Zainoel Abidin Hospital. Head injuries and strokes were the most frequent diagnosis led to Emergency Department Dr. Zainoel Abidin Hospital. Furthermore, our study found that 51% of the referral care system issue was that the patient did not arrive at the Emergency Department of Dr. Zainoel Abidin Hospital after being confirmed to be referred through telephone. Most of this issue happened in June for an unknown reason. At the same time, another 23% was due to the unavailability of intensive care.

Keywords: Referral, patient, emergency, characteristics, diagnosis

Introduction

In response to the patients in an emergency condition, the district's first-level reference hospitals often referred the patient to hospitals with higher facilities and services to receive more comprehensive treatment. The referral decision for the patient must consider the patient's safety and danger because the risks in the referral process of patients in a critical condition are increased. Risks during referring patients can be minimized by a safe transport protocol, trained staff, and monitoring tools during the patients' transfer process (College of Anaesthesiologists Academy of Medicine of Malaysia, 2016).

Patient referral is a comprehensive and thorough process involving moving patients from one hospital to another (National Highway Traffic Safety Administration, 2003). Critical patients are patients with dysfunction or failure in one or more body systems, depending on monitoring and therapy equipment. Transportation in this case is not only about taking patients to the hospital, but involves a series of tasks from picking up the patient with ambulance until arriving at hospitals for further treatment (Australian College For Emergency Medicine, 2015).

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The main reason for transferring patients with severe conditions is the inability of the hospital service in the district or regency to accurately diagnose the patients' condition and to provide the healthcare treatment needed. The decision to transfer a patient in critical condition was made after evaluating the patient's benefits and risks. There are two risks of patient referral: medical risks and travel risks, and to minimize the risk of referral patient it is very important to stabilize the patient in the home hospital and prepare for diagnosis and therapy during the transfer. It is important to inform the patient or his/her family about the facts and explain the situation, the reason for transfer, the name of the referral hospital, and the consent of the patient or his/her family (Kulshrestha and Singh, 2016).

Several reasons for referring patients include the lack of adequate facilities, expert staff, intensive care services, supporting examinations, and finances. Every patient referral must maintain optimal health conditions by moving the patient to the nearest facility with better health services. Hasty and unorganized transfer/referral of patients can result in morbidity and mortality. Therefore, it is necessary to have good coordination and cooperation between the referring hospital and the destination hospital to provide the best service for patients (Kulshrestha and Singh, 2016).

Dr. Zainoel Abidin Hospital Banda Aceh has been designated as a primary teaching hospital of Faculty of Medicine, Syiah Kuala University, Banda Aceh. Dr. Zainoel Abidin Hospital has duties and functions to provide comprehensive and affordable healthcare services to all levels of society. Dr. Zainoel Abidin Hospital provides excellent and quality healthcare services to the Aceh Province community and provides referral services from public health centers and regional hospitals. With all the duties and functions, Dr. Zainoel Abidin Hospital has become the main referral hospital from all hospitals in Aceh Province (RSUD Dr. Zainoel Abidin, 2015). Based on this background, we want to know more about the characteristics of patients who were referred to the Emergency Department of Dr. Zainoel Abidin Hospital.

The purpose of this study was to determine the characteristics of referral patients and the issues that are often encountered in the patient referral process at the Emergency Department of dr. Zainoel Abidin Banda Aceh. The findings of this study can be used to formulate policies that contribute to the development of adequate services providing, improve patient safety before arriving at the provincial referral hospital, and improve the quality of health services in Dr. Zainoel Abidin Hospital.

Methods

Study instrument and explanatory variables

This was a quantitative study conducted at the Emergency Department of Dr. Zainoel Abidin Hospital, from April 15 to June 15, 2019. The population sample in this study was referral patients' data recorded in the Emergency Department medical record that met the inclusion criteria. Inclusion criteria in this study were characteristic variables of patients' medical records, including age, diagnosis, times of arrival, and the previous hospital. In comparison, the exclusion criteria in this study the characteristic variables of the patient's were unrecorded, including age, diagnosis, time of arrival, and the previous hospital.

Study setting and data collection

We performed data collection with purposive sampling from all patients referred to the Emergency Department of Dr. Zainoel Abidin Hospital who meet the inclusion and exclusion criteria. This study used a quantitative approach, in which the data were presented in numbers and displayed in images, tables, or graphs.

Statistical analysis

Univariate analysis was used in this study to assess each variable by calculating the frequency distribution descriptively. The SPSS Statistics software package was used to conduct the statistical analyses.

Results

In total, 1.674 patients met the inclusion and exclusion criteria. The results showed that there was no significant difference in the number of patients admitted from April to June 2019. However, it there was an increasing number of patients admitted in April (Figure 1).

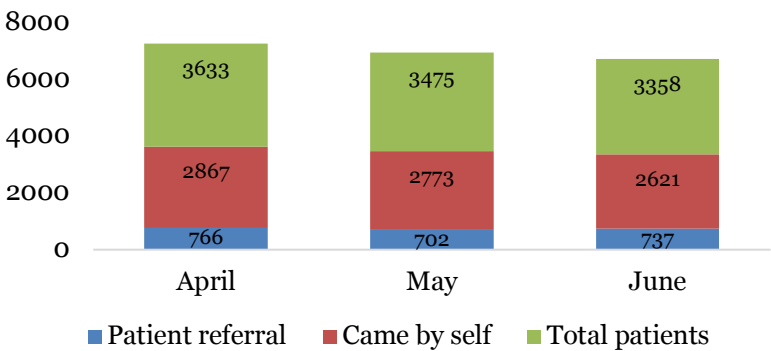


Figure 1. The number of patients at the Emergency Department of Dr. Zainoel Abidin Hospital from April to June 2019

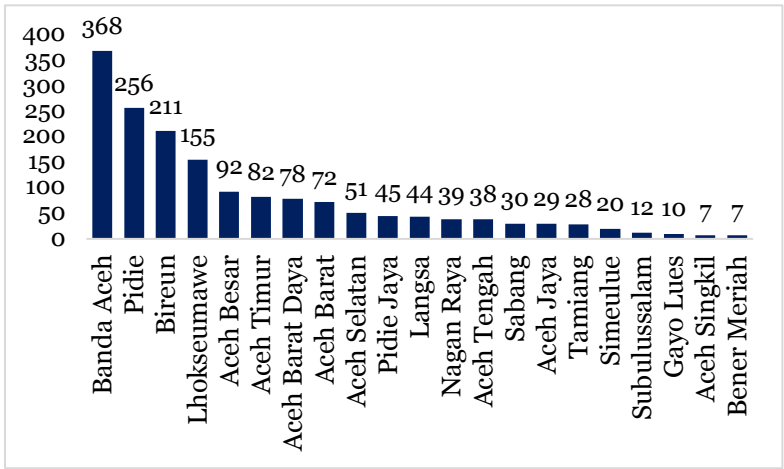


Figure 2. The proportion of referral patients by Regency/City of origin

In regards to the origin of the patients, most referrals patients were referred from Banda Aceh, followed by Pidie and Bireuen (Figure 2). The regions with the lowest patient referrals were Bener Meriah and Aceh Singkil. Table 1 showed that the most distant referral patient came from Aceh Singkil.

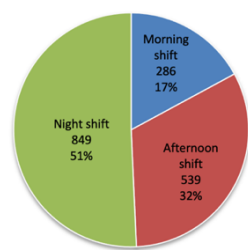


Figure 3. The description of patients’ proportion based on times of arrival

In this study, we found that almost half of the referral patients arrived at the emergency room of Dr. Zainoel Abidin Hospital during the night, while very few arrived in the morning (Figure 3).

Table 1. The estimated distance and travel time from each regency/district to Banda Aceh (n=20)

No.	District/City	Estimated travel time	Estimated distance
1	Aceh Barat	± 5 hours	± 243 km
2	Aceh Barat Daya	± 9 hours	± 472 km
3	Aceh Besar	± 1 hours	± 32 km
4	Aceh Jaya	± 3 hours	± 150 km
5	Aceh Selatan	± 8 hours	± 437 km
6	Aceh Singkil	± 12 hours	± 642 km
7	Aceh Tengah	± 7 hours	± 347 km
8	Aceh Timur	± 9 hours	± 446 km
9	Bener Meriah	± 6 hours	± 318 km
10	Bireuen	± 4 hours	± 220 km
11	Gayo Lues	± 9-10 hours	± 454 km
12	Pidie	± 3-4 hours	± 164 km
13	Langsa	± 8 hours	± 435 km
14	Lhokseumawe	± 5 hours	± 275 km
15	Nagan Raya	± 5-6 hours	± 298 km
16	Pidie Jaya	± 3-4 hours	± 173 km
17	Sabang	± 2-3 hours	± 37 km
18	Simeulue	± 16 hours	± 333 km
19	Subulussalam	±11 hours	± 583 km
20	Tamiang	± 8-9 hours	± 468 km

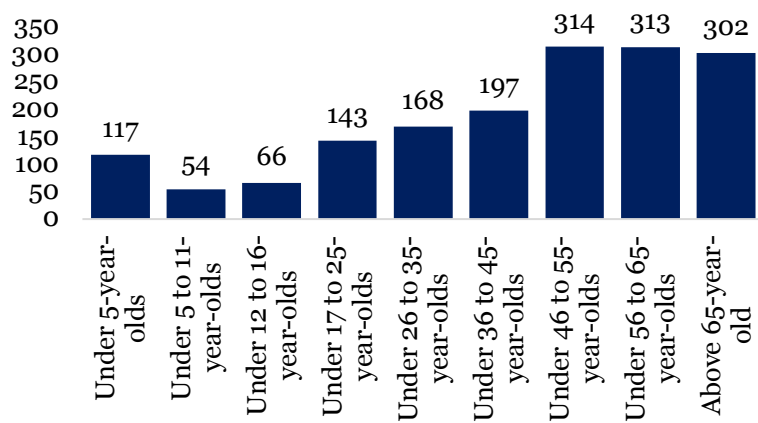


Figure 4. The proportion of referred patients by age

The most referred patients by age categories were 46-55-year-olds and 56-65-year-olds, with the highest percentage was the 46-65-year-olds group, and the lowest percentage was the 5-11-year-olds group (Figure 4).

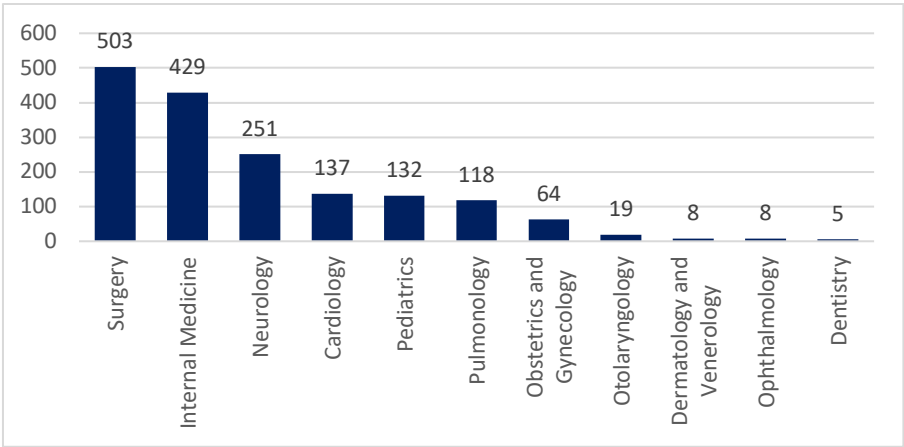


Figure 5. The proportion of departments that received referred patients

Based on the department that received referrals, most patients were referred to the Surgery Department, followed by the Internal and the Neurology Department, while the departments that received fewest referrals were the Dentistry and Ophthalmology Department (Figure 5).

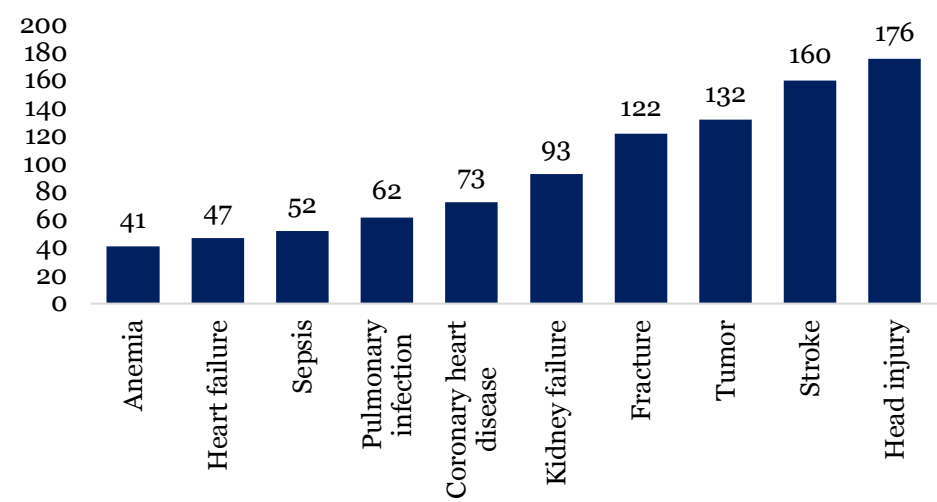


Figure 6. The proportion of referral patients based on the top 10 diagnoses

From the 10 most diagnoses referred to the Emergency Department of Dr. Zainoel Abidin Hospital, patients with head injuries, stroke, tumors, and fractures were the most referred (Figure 6).

Based on the diagnosis description, the average number of patients referred were patients who needed diagnostic tools support, such as CT scans to perform body scanning for head trauma and stroke patients.

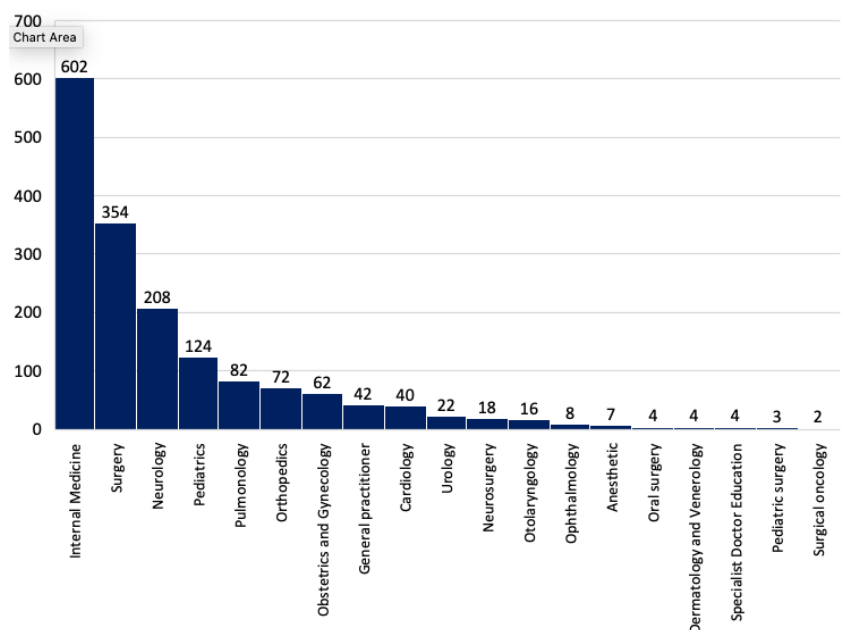


Figure 7. The proportion of referred patients by referring department/specialist
Similar to the Emergency Department at Dr. Zainoel Abidin Hospital, the highest percentage of patients referred were to the Internal medicine Department and the Surgery Departments (Figure 7).

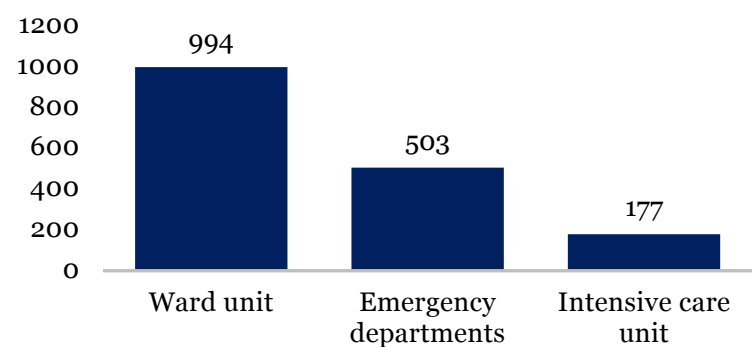


Figure 8. The proportion of referred patients based on the care ward in previous hospitals

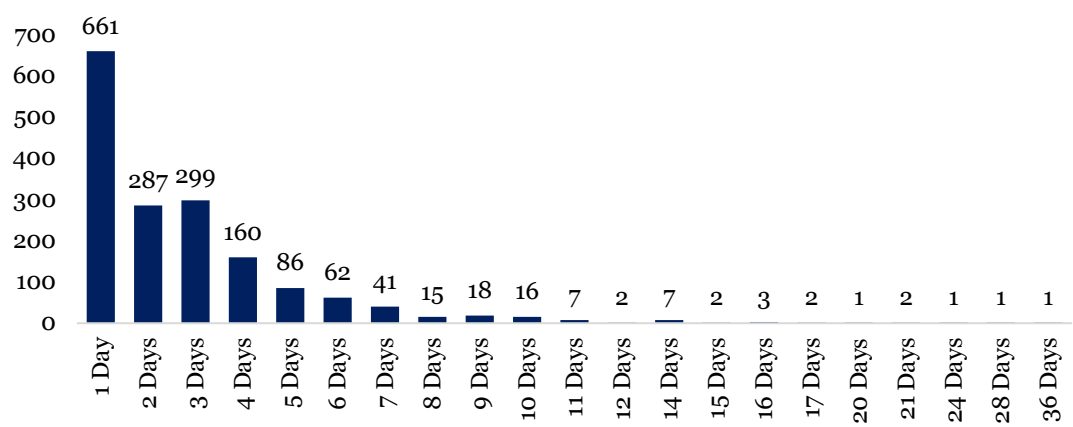


Figure 9. The proportion of referred patients based on the treatment duration at the previous hospital before being referred to Dr. Zainoel Abidin Hospital

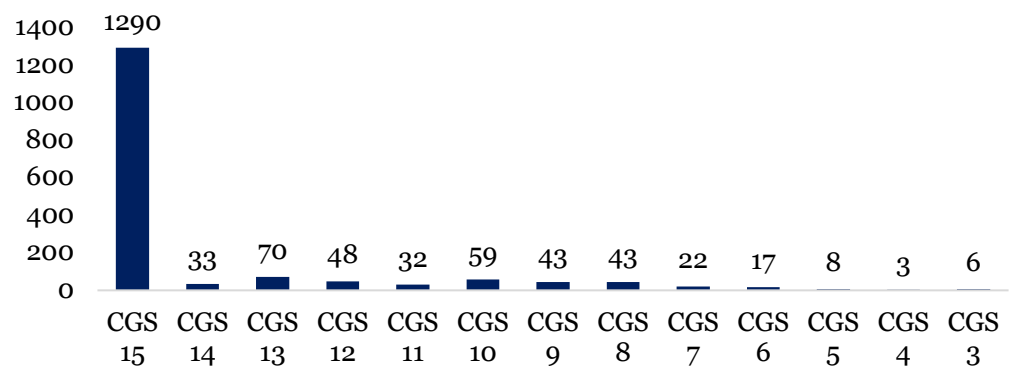


Figure 10. The proportion of referred patients based on the consciousness level of patients by Glasgow Coma Scale (GCS) when arriving at the Emergency Department of Dr. Zainoel Abidin Hospital

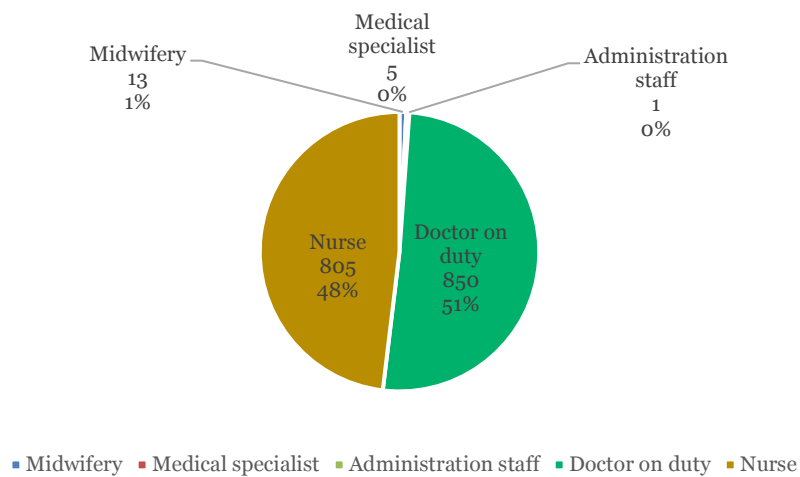


Figure 11. Description of the proportion of attendance staff who reported the referral patients'

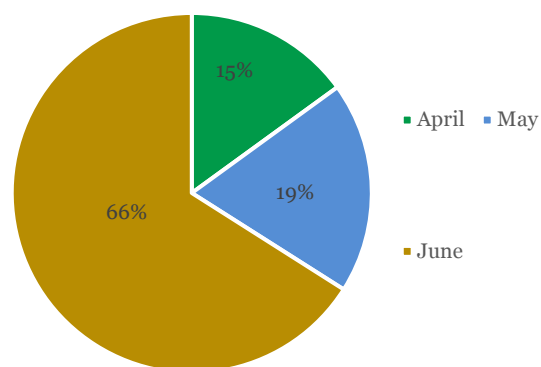


Figure 12. The proportion of patients who were contacted but did not arrive by month

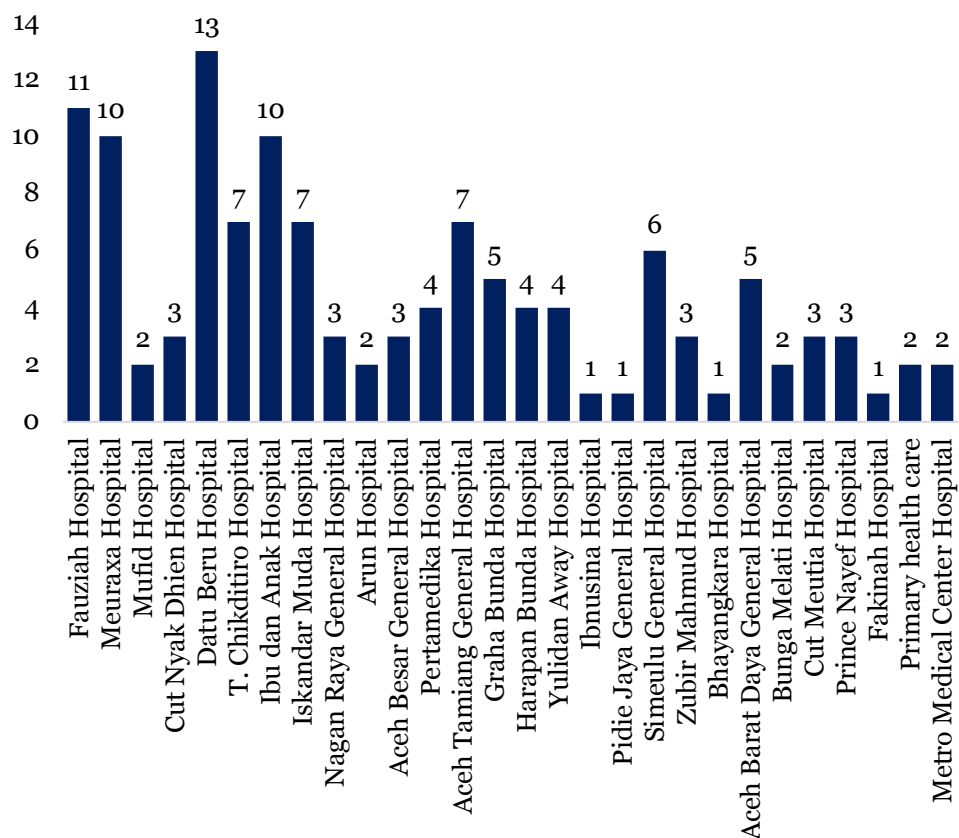


Figure 13. The proportion of referral patient who has been confirmed from the previous hospital but did not arrive

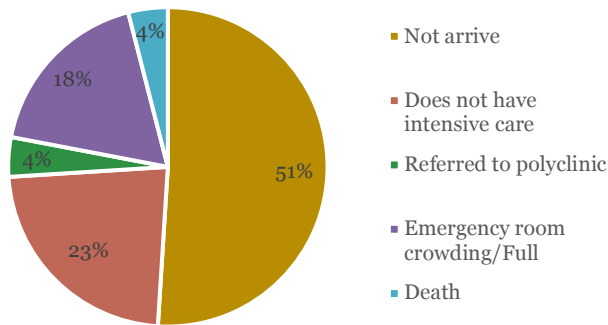


Figure 14. Description of the causes of patients who have been contacted but have not arrived

Discussion

Dr. Zainoel Abidin Hospital is located in Banda Aceh, thus, hospitals within Banda Aceh area have the advantage of referring patients to the referral hospital of the province of Aceh. In addition, the number of hospitals in Banda Aceh is more than in other districts in Aceh. Compared to other areas in Aceh, Bireuen has the second largest number of hospitals in Aceh, which makes Bireuen a meeting point where transportation from central Aceh and the east regencies of Aceh is connected. Despite the strategic location, Bireuen was the third area with the highest number of referrals in the Emergency Department of Dr. Zainoel Abidin Hospital, as shown in Figure 2.

In terms of distance and travel time, Sabang and Simeulue are archipelagic areas, where access to transport patients requires cooperation or access via ships or airplanes. The patient transportation access in those islands is not as easy as in other areas in Aceh Province. For areas in Aceh Province that can be transported by land access, Aceh Singkil is the area that takes the longest time to arrive in Banda Aceh, followed by Subulussalam. This result is in line with previous studies wherein the distance and travel time often causes rescheduled or missed visits for hospital check-up, delayed care, and missing or delayed prescription use, due to transportation constraints. These implications may result in poorer chronic illness management and, as a result, lower health outcomes (Syed et al., 2013).

A further novel finding on the age results showed in Figure 4. This result highlights that most referral patients to the Emergency Department aged 46 to 65 years, while the lowest percentage were patients aged 5-11 years. Based on the department that received referrals, the most referrals were the Surgery Department, the Internal Medicine Department, and the Neurological Department. The results of the ten most diagnoses referred to the Emergency Department showed that the patients with head injuries were the most frequently referred to the Emergency Department of Dr. Zainoel Abidin Hospital. Most of the seven diagnoses referred to the Emergency Department of Dr. Zainoel Abidin Hospital were non-infectious diseases. According to WHO data in 2008, from 57 million deaths occurred worldwide, 36 million or nearly two-thirds were caused by non-infectious diseases. Non-infectious diseases also kill younger people. In countries with low and middle economic levels, 29% of deaths occur in people below 60 years were caused by non-infectious diseases, while in developed countries, it causes 13% of deaths. The proportion of death due to non-infectious diseases in people aged 70 years old is less, while the high mortality rate at this age proportion caused by cardiovascular (39%), cancer (27%), diabetes (4%), and chronic respiratory diseases, digestive diseases, and others non-infectious diseases cause about 30% of deaths (Alwan, 2011).

In the case of non-arrival patients to the Emergency Department of Dr. Zainoel Abidin Hospital, the highest number was in June, when 94 patients were confirmed to be referred from the previous hospital. In June, the increased number of patient referrals and personal visits to the Emergency Department caused the crowded wards. This condition impacts the number of inpatients stuck in the Emergency Room and makes it difficult to accept new patients because there was no empty ward. However, in line with the ideas of Morley et al. (2018), it can be concluded that if the international ED crowding crisis is resolved, actions aimed to tackle the problem must be customized to address identified causes.

From Figure 7, it is clear that the internal medicine department refers more patients than another departments. This can be due to the vast field of internal medicine expertise, which can handle some clinical conditions according to their competence, and the lack of pulmonary and cardiac specialists in previous hospital departments. Other results have shown that most patients came from the standard ward. As for the length of treatment, the maximum is one day of treatment. With the longest duration patient was treated for 36 days. These basic findings are similar to Karaca et al. (2012), which stated the length of ED visits significantly varied depending on the admission hour, day of the week, patient volume, patient characteristics, hospital features, and geographic location. As for the referral patient consciousness level, almost all referred patients were fully conscious.

Based on the referring hospitals, the highest non-arrival referrals were 13 patients from Datu Beru Hospital, followed by Fauziah Hospital, Meuraxa Hospital, and Ibu dan Anak Hospital Banda Aceh with ten people non-arrived referral patients. From

the 142 patients' non-arrived referrals, 51% of the referring hospitals had confirmed and informed the patient's condition and received a referral letter to be sent to RSUZA, but the patient did not arrive. There was no confirmation or follow-up report from the referring hospital about the non-arrived referral patients. Only 4% were informed that the patient had died on the road and sent back to the previous hospital or city. However, there were several reasons for 49% of non-arrival referrals, such as 23% of the patients were planning to be treated intensively, and other patients such as newborns or babies wanted to treat in infant care in the neonatal intensive care unit (NICU) because there is no empty ward. The 4% remains of patient referrals to the Emergency department were transferred to the polyclinic according to the criteria for the patient's condition was carried out by the Emergency Department of Dr. Zainoel Abidin Hospital.

The common issue in the referral system is that several cases had been confirmed to be referred but did not arrive at the emergency room of Dr. Zainoel Abidin Hospital. The highest number of patients who had been confirmed but did not arrive at the emergency room of Dr. Zainoel Abidin Hospital was found in June. For the most common cause, 51% had no explanation, while the other 23% were due to the unavailability of the Intensive Care Room. The hospital with the highest proportion of patients arriving after contact was Datu Beru, Takengon Hospital and Fauziah, Bireuen Hospital.

According to general referral protocol, before the patient is referred using an ambulance, the regional hospital will inform the Emergency Department to report the patient's conditions and plan to facilitate access and patient transportation at the right time at the Emergency Department. In this case, the reporting of the patient referral process was done by the doctor or the nurse.

The characteristics of previous referral hospitals in Figure 13 described most of the patients were referred from Banda Aceh, followed by Pidie and Bireuen. The area with the least referrals were Bener Meriah and Aceh Singkil. Meanwhile, from the time of arrival of most patients, most of the patients arrived during the night shift due to the distance travelled from several districts/cities to Banda Aceh that requires a long travel time by road, caused an accumulation in the number of patients arriving at night.

One concern about the finding is shown in Figure 14 in which there was a slight decrease in the number of patients referred to the Emergency Department of Dr. Zainoel Abidin Hospital in May 2019. We speculate that this might be because people were celebrating Eid al-Fitr for a whole month, where people prefer to celebrate this day by gathering with relatives, thus postponing visits to the emergency rooms or hospitals, although the difference was not significant compared to April or June. A similar results pattern was obtained in other Muslim countries that show there were no statistically significant differences in patients' attendance to hospital during Ramadan compared with other months (Butt et al., 2016).

Conclusion

This study showed that most patients were referred from Banda Aceh, Pidie, and Bireuen, while fewest patients were referred from Bener Meriah and Aceh Singkil. This data indicates that the closer the area is to Banda Aceh, the more patients are referred. For age categories, the most referred patients were adult patients and elderly patients, aged 46-65 years, while the lowest percentage was children, aged 5-11 years. These present findings confirm the possibility of degenerative diseases associated with individual age. Non-infectious diseases, such as head injuries and strokes, were the most common reasons for referral due to the unavailability of supporting facilities such as CT scans in the previous hospitals. The issue commonly

found in regards to non-arrived referral patients was the lack of communication between the referring hospital and the destination hospital about the present information of referral patients.

Authors' contributions

Conceptualization: MS and NH; Data curation: NH, SPH, and RA; Formal analysis: NH and SPH; Investigation: MS; Project administration: MS; Resources: MS; Software: NH; Supervision: MS; Validation: MS; Writing-original draft preparation: MS and NH; Writing-review and editing: MS and NH.

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Conflict of interest

The authors declare no conflict of interest.

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