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IMPROVING EMERGENCY DEPARTMENT OVERCROWDING IN MALAYSIAN GOVERNMENT HOSPITAL

(Menambah Baik Kesesakan Jabatan Kecemasan di Hospital Kerajaan Malaysia)

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ABSTRACT

There have been a marked increase in emergency department (ED) visits. This has led to healthcare problems in ED, particularly overcrowding. This paper aims to contribute towards ED overcrowding by increasing the efficiency level of the department through eliminating ED bottlenecks and reallocating ED resources. An ED located in Kuala Lumpur was chosen as the study setting. Integration of Discrete Event Simulation (DES) and Data Envelopment Analysis (DEA) were adopted in this study. DES is used to model the ED system and to identify the system bottlenecks. Meanwhile, DEA is applied to select the best alternative to resources allocation. We also present a novel mathematical equation for generating resources allocation alternatives based on the hospital budgets. The new configuration number of ED resources constructed in this study improved the system bottlenecks. Patients' waiting time was reduced by 52%. The utilisation rate among Red Zone Doctors, Green Zone Doctors and Yellow Zone Nurses was reduced successfully from 89% to 85%, 98% to 90% and 91% to 89%, respectively. In conclusion, the finding in this study has produced better results in patient waiting time and resource utilisation and thus, enhance the hospital efficiency. Hopefully, in future the hospital will become a role model for other hospital in improving their services.

Keywords: emergency department; overcrowding; efficiency problem; discrete event simulation; data envelopment analysis

ABSTRAK

Dewasa ini peningkatan ketara pesakit ke jabatan kecemasan (JK) telah mendatangkan pelbagai masalah seperti kesesakan di JK. Justeru, kajian ini dijalankan bertujuan untuk menyelesaikan masalah kesesakan di JK dengan meningkatkan tahap kecekapan jabatan dengan menghapuskan kesendatan dan menyusun atur kembali sumber-sumber JK. Sebuah JK yang terletak di Kuala Lumpur telah dipilih sebagai lokasi kajian. Kaedah Simulasi Peristiwa Diskret (SPD) dan Analisis Penyampulan Data (APD) telah digunakan dalam kajian ini. SPD digunakan untuk memodelkan sistem JK dan mengenal pasti kesendatan yang wujud. APD pula digunakan untuk memilih alternatif penambahbaikan yang optimum bagi pengagihan sumber. Suatu rumus matematik baharu juga telah dibina bagi menjana alternatif-alternatif penambahbaikan tersebut menggantikan sistem manual yang digunakan sebelum ini. Hasil kajian menunjukkan tatarajah baharu sumber JK yang dibina berjaya menambah baik kecekapan sistem. Masa menunggu pesakit juga telah berjaya dikurangkan sebanyak 52%. Manakala peratusan penggunaan Doktor Zon Merah, Doktor Zon Hijau dan Jururawat Zon Kuning masing-masing telah berkurangan daripada 89% kepada 85%, 98% kepada 90% dan 91% kepada 89%. Kesimpulannya, penemuan dalam kajian ini telah menghasilkan masa menunggu pesakit dan peratusan penggunaan sumber yang lebih baik dan seterusnya meningkatkan tahap kecekapan JK. Semoga hospital ini akan menjadi penanda aras kepada hospital lain dalam meningkatkan kecekapan perkhidmatan mereka pada masa akan datang.

Kata kunci: jabatan kecemasan; kesesakan; masalah kecekapan; simulasi peristiwa diskret; analisis penyampulan data

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