Effect of Emergency Department Crowding on the Outcome of Cardiac Arrest in South Korea.

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BACKGROUND:

Successful resuscitation following cardiac arrest requires substantial resources and commitment during cardiopulmonary resuscitation (CPR). Emergency department (ED) overcrowding may interfere with the provision of optimal care, and thus may affect the outcome of cardiac arrest. We evaluated the effect of ED crowding on the outcome of cardiac arrest patients who received CPR in ED.

METHODS:

The National Emergency Department Information System (NEDIS), a nationwide observational registry for ED information in South Korea was used in this study. Patients with cardiac arrest received CPR in ED during 2017 were included. The definition of crowdedness in ED was 80th percentile of number of patients staying in hourly distribution of all visits which calculated in each ED. Odds ratio of survival discharge rate according to ED crowding was analyzed by logistic regression analysis.

RESULTS:

During the study period, 27,724 patients with cardiac arrest in 404 hospitals were included in this study. 7,526 patients visited while ED is crowding and were assigned by crowding group, and 20,198 were non-crowding group. Crowding group showed a higher rate of survival discharge from ED than non-crowding group (odds ratio [OR], 1.06; 95% confidence interval [CI], 1.00-1.13). Subgroup analyses showed similar results across the subgroups; at day-time (9am-6pm) (OR, 1.01; 95% CI, 0.93-1.10), at night-time (OR, 1.11; 95% CI, 1.01-1.21), in high-volume hospitals (OR, 1.07; 95% CI, 0.98-1.17), in low-volume hospitals (OR, 1.06; 95% CI, 0.97-1.15).

CONCLUSION:

ED crowding did not decrease the survival discharge rate of cardiac arrest patients who received CPR in ED in South Korea.

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Table 1. Comparison of the survival discharge rate from ED between crowding group and non-crowding group.

	N	Survival discharge from ED		OR (95% CI)	P Value
		Crowding group(%)	Non-Crowding group(%)		
Total	27,724	28.30	27.07	1.06(1.00-1.13)	0.04
Visit time					
Day	13,234	28.38	28.10	1.01(0.93-1.10)	0.74
Night	14,490	28.21	26.22	1.10(1.01-1.21)	0.02
Hospital volume					
High-volume	13,858	28.08	26.72	1.07(0.98-1.17)	0.11
Low-volume	13,866	28.50	27.43	1.06(0.97-1.15)	0.20
Age group, year					
<16	523	36.11	31.13	1.25(0.84-1.87)	0.28
16-60	9,225	34.41	33.09	1.06(0.96-1.17)	0.23
>60	17,976	24.97	23.85	1.06(0.99-1.15)	0.12

OR: odds ratio; CI: confidence interval; N: Number of patients
Patients in crowding group visited ED when it is crowding by definition.