Socioeconomic status influences delays in the management of acute ST-elevation myocardial infarction

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Background: A prompt diagnosis to initiate the appropriate reperfusion therapy is crucial to improve clinical outcomes in acute ST-elevation myocardial infarction (STEMI) patients. Socio-economic status (SES) refers to parameters like income, educational status and occupation. A low SES negatively interferes with the prognosis of STEMI patients. However, the impact of SES on delay time in acute STEMI remains matter of debate.

Methods: We used databases from two French multicentric and prospective registries: ACIRA (patients undergoing coronary angiography in any catheterization laboratories of Aquitaine) and REANIM (acute STEMI patients supported by emergency medical system (EMS) in Aquitaine). An ecological indicator of social deprivation Fdep09 was calculated to describe geographical inequalities in health based on municipality of residence. The higher the value, the more disadvantaged the population. Low SES was defined as Fdep09 > median value.

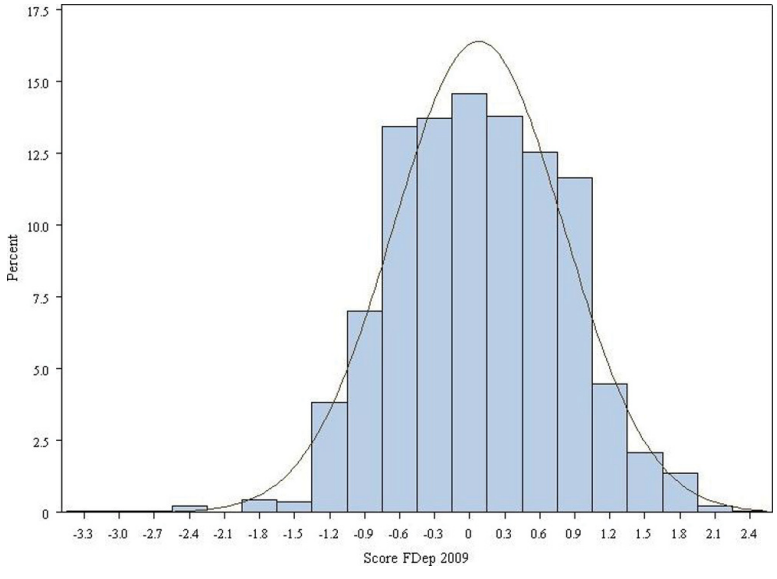
Results: Two-thousand-eight-hundred-and-forty consecutive patients with acute STEMI undergoing coronary angiography from January 2017 to December 2018 in Aquitaine were included. Patients with lower SES were more often initially referred to emergency departments of non-percutaneous coronary intervention capable centers whereas patients with higher SES were more often directly transferred to PCI centers by the mobile emergency care units as recommended by the most recent European guidelines ($p<10^{-4}$). Patients with low SES had longer delays from symptom onset to first medical contact (FMC) (116 [60–119] vs 98 [55–233] min, p=0.0078) and were more likely to receive fibrinolysis (9.9 vs 5.2%, $p<10^{-4}$). Linear regression modeling showed that each point of the Fdep09 index was associated with increase in the delay from symptom onset to FMC by a factor 1.1 (95% CI: 1.04–1.17, p<10–3) after adjusting for potential confounders.

Conclusion: SES inequality has negative influence on the delays in the management of acute STEMI patients. Efforts to raise awareness of suspicious signs of acute MI among individuals in lower SES could be valuable.

Results

Delay time median [Q1–Q3]	Total (n=2840)	High SES Fdep09 < median (n=1379)	Low SES FDep09 > median (n=1378)	P value
From symptom onset to FMC	2255	1119	1075	
	106 [58–218]	98 [55–233]	116 [60–219]	0.0078
From FMC to ECG	2219	1085	1068	
	7 [4–16]	6 [4–12]	9 [5–20]	<0,0001
From ECG to revascularization	2391	1159	1173	
	83 [60–125]	79 [58–116]	90 [62–136]	0.0001
From symptom onset to revascularization	2331	1133	1140	
	220 [145–405]	209 [140–390]	232 [155–424]	0.0008
From FMC to revascularization	2536	1232	1240	
	94 [67–147]	85 [64–134]	104 [72–162]	<0.0001

By Wilcoxon test. SES, Socioeconomic status; ECG, Electrocardiogram; FMC, First medical contact.



FDep09 distribution