

## Barriers associated with emergency medical service activation in Italian patients with ST-segment elevation acute coronary syndromes

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**Background:** Many ST-segment elevation acute coronary syndrome (STEACS) patients fail to activate the Emergency Medical System (EMS), with possible dramatic consequences. Prior studies focusing on barriers to EMS activation include patients with any acute coronary syndrome (ACS) without representation of southern European populations. However, barriers are influenced by the ACS type and by socio-demographic and racial factors.

**Purpose:** We aimed to investigate the barriers to EMS call for patients diagnosed for STEACS in Italy.

**Methods:** A prospective, single-center, survey-based study, including all the patients treated with primary percutaneous coronary intervention for STEACS in a tertiary hospital in northern Italy from 1st June 2018 to 31st May 2020.

**Results:** The questionnaire was filled out by 293 patients. The majority of the participants were males (74%), married (70.4%), with a high-school degree (38.4%) and with a median age of 62 years. Chest pain as a possible symptom related to a cardiovascular attack is known by most of the respondents (89%), and left arm pain/shake by 53.7% of them, whilst the other possible signs and symptoms (i.e. dyspnea, asthenia, sweating, nausea, vomiting, dizziness) were unknown to the majority of the participants. Only 191 (65.2%) of the participants activated the EMS after symptoms onset. The main reasons for not calling EMS were the perception that

symptoms were not related to an important health problem (45.5%) and that a private vehicle is faster than EMS to reach the hospital (34.7%). The median time to first medical contact was 60 minutes, and it was significantly higher in the patients who did not call EMS compared to those who did (180 [60–420] mins vs 35 [15–120] mins,  $p < 0.001$ ). The patients who called a private doctor after symptoms onset did not call EMS more frequently than those who did not (5.9% vs 8.2%,  $p = 0.3$ ). Moreover, 30% of the patients who did not call the EMS would still act in the same way if a new episode occurred and the main reasons for this were that they think to be faster than EMS (57.1%) and to live close to the hospital (17.9%). Analyzing predictors of EMS activation, only prior history of cardiovascular disease has been demonstrated to be a predictor of calling the EMS in case of symptoms suspected for STEACS.

**Conclusions:** Our study, from the southern Europe, showed that a substantial percentage of patients with symptoms suspected for STEACS preferred private vehicle rather than activating the EMS. Our results highlight the need for information campaigns targeted to both the general population and medical doctors, stressing that the EMS is faster than a private vehicle to direct the patient to the right hospital and increasing the awareness of the people on the type of possible heart attack symptoms, which seem to be the most neglected issues by patients who did not call the EMS.