



Impact of the “ACT NOW. SAVE A LIFE” public awareness campaign on the performance of a European STEMI network[☆]



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ARTICLE INFO

Article history:

Received 29 May 2015

Accepted 18 June 2015

Available online 19 June 2015

Keywords:

ST-segment elevation myocardial infarction

Health education

Primary percutaneous coronary intervention

To the editor:

Reperfusion either by primary percutaneous coronary intervention (PCI) or fibrinolytic drugs has shown to improve patient survival after an ST-segment elevation myocardial infarction (STEMI). Currently, primary PCI is the treatment of choice when it can be performed in an expedited time [1]. In STEMI patients there is a time-dependent mortality reduction for primary PCI [2]. In this regard, a shorter delay is observed if patients are diagnosed out-of-hospital and directly transferred to an interventional center [3]. Therefore, patients should recognize the symptoms and know how to activate the emergency medical services (EMS) by quickly calling their local emergency number (i.e. 112). Despite the previous evidence, there is a paucity of knowledge of myocardial infarction symptoms among the general public [4]. The results of public awareness campaigns to reduce time delays have been controversial [5–7]. In June 2012, the “ACT NOW. SAVE A LIFE” public educa-

tion campaign was introduced by the Stent for Life Initiative in Catalonia, Spain. This prospective, community level study, aimed to determine if a public awareness campaign could increase the number of STEMI code activations, EMS activations for chest pain, reduce patient related time-delay, and increase patient awareness of myocardial infarction signs and symptoms in the STEMI network of Catalonia.

Description of the Catalan STEMI network can be found elsewhere [8,9]. The campaign was carried out between September 2012 and February 2013. The “ACT NOW. SAVE A LIFE” (*Els segons compten. Salva una vida*) campaign is part of the Stent for Life Initiative, and is based in four key messages: (1) know the symptoms, (2) act quickly, (3) call EMS, and (4) receive treatment. In order to plan, execute, and evaluate the campaign in Catalonia, a multidisciplinary working group was developed. This working group involved representatives of the Stent for Life Initiative, the Spanish Society of Cardiology, the EMS, and the Department of Health of Catalonia. Leaflets, posters, magnets, and videos (supplementary material) with information on acute coronary syndrome symptoms and treatment, and EMS telephone number (112) were delivered through the regional health network and exposed in all major hospitals and primary care centers and city halls in Catalonia. A press conference with government authorities and health care professionals was held at the beginning of the campaign and widely reported in local newspapers. Local radio stations broadcast interviews with specialists in cardiovascular disease that were prepared to deliver key messages of the campaign. Data were obtained from the Catalonian STEMI registry, EMS registry and the Continuous Catalan Health Survey (*Enquesta de Salut Contínua de Catalunya—ESCAc*). Detailed information about Health Poll methodology can be reviewed elsewhere [10]. For the purpose of our study, three periods of six months were evaluated. (1) Pre-intervention period (March 2012–August 2012), (2) Post-intervention period: (March 2013–August 2013), and (3) Control period (March 2010–August 2010). To evaluate the knowledge and attitude of the population in front of a myocardial infarction we included in the 4th (January 2012–June 2012), 5th (July 2012–December 2012), and 6th (January 2013–June 2013) 6 months waves of the poll the question “If you think you might have a heart attack, what would you do?”. The relationship between continuous variables during the three periods

[☆] Authors take responsibility for all aspects of the reliability and freedom from bias of the data presented and their interpretation.

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Table 1
STEMI code activation, EMS response, and time delay data.

	Control	Pre-intervention	Post-intervention	Pre- and post-intervention	
	(2011)	(2012)	(2013)	Mean difference	P value
STEMI code episodes in Catalonia	241.8 (8.2)	253.5 (2.8)	277.8 (7.6)	24.3 (8.1)	0.06
EMS activations with a chief complain of chest pain	2325 (257)	2194 (220)	2430 (155)	236 (124)	0.23
Out of hospital STEMI diagnosis by EMS personnel	47.8 (10.6)	38.1 (6.0)	56.8 (9.2)	18.7 (10.7)	0.01
Patients arriving to PCI center by EMS	73.3 (7.0)	74.5 (10.8)	93.2 (7.8)	18.6 (16.2)	<0.01
Chest pain to ECG (min)	175.3 (15.7)	166.3 (9.7)	181.8 (12.2)	15.5 (10.0)	0.18
ECG to balloon (min)	131.5 (2.5)	136.8 (7.2)	125.7 (1.9)	- 11.2 (7.2)	0.18
Pain to balloon (min)	306.8 (15.1)	303.2 (13.8)	307.0 (12.3)	4.3 (6.2)	0.52

Data is presented as monthly mean (standard deviation) during study period.

Abbreviations: EMS = Emergency Medical Services; IQR = Interquartile range; PCI = Percutaneous coronary intervention; and STEMI = ST segment elevation myocardial infarction.

was explored using 1-way analysis of variance with Bonferroni post hoc test. Categorical variables are expressed as whole number and percentage and compared between groups using the chi-square or Fisher's test when necessary. All statistical analyses were performed using STATA SE version 13 (Stata Corporation, College Station, TX, USA).

A total of 1521 (253.4 per month) STEMI episodes were treated by the Catalonian STEMI network during the pre-intervention period, and increased to 1667 (277.8 per month) STEMI episodes during the post-intervention period. During the pre-intervention period, 13,164 (2194 per month) calls were received at the EMS with a chief complain of chest pain and increased to 14,580 (2430 per month) calls during the

post-intervention period. EMS personal diagnosed 229 (38.1 per month) episodes of STEMI out-of-hospital in the pre-intervention period, while 341 (56.8 per month) STEMI episodes were diagnosed by the EMS during the post-intervention period. During the pre-intervention period 449 (74.5 per month) patients were directly transferred to the PCI center by EMS and increased to 559 (93.2 per month) during the post-intervention period (Table 1 and Fig. 1). There were no significant changes regarding time delay from symptoms to first medical contact (FMC), and from FMC to balloon during the 3 periods of analyses (Table 1). Regarding the question "If you think you might have a heart attack, what you would do?" the percentage of answers "Call 112"

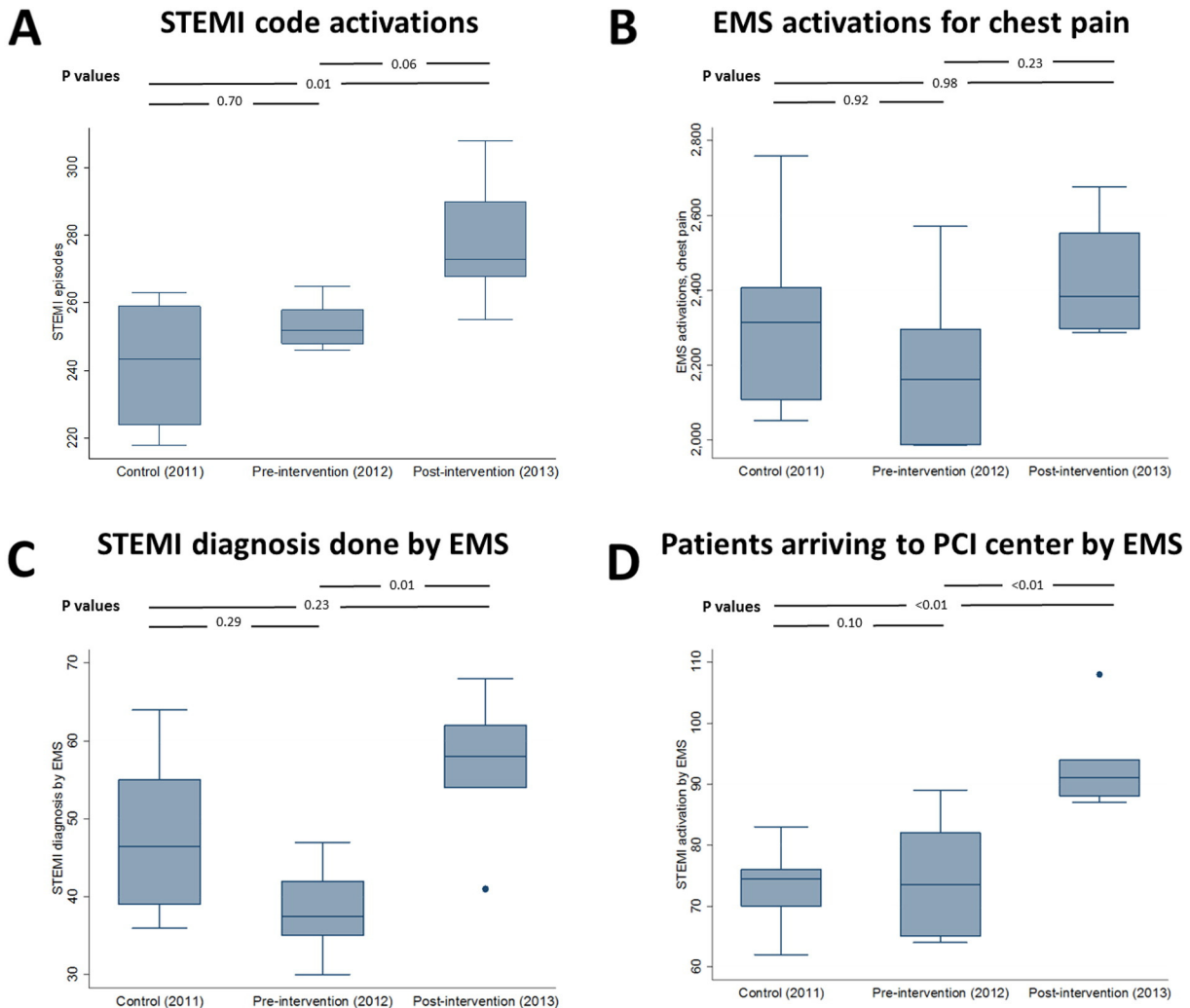


Fig. 1. EMS and STEMI network activations according to study period.

increased from 826 (42.1%) and 751 (41.2%) in the control and pre-intervention periods respectively to 892 (44.6%) after the campaign (pre-intervention vs. post-intervention; $p = 0.04$).

In conclusion, the implementation of a public awareness campaign, and in particular the increased use of the EMS number, is associated with a significant increase in the number of patients treated within a STEMI network. We did not observe any additional effects on time delays. Further efforts are needed to educate patients and public on the need to call the EMS services immediately to further shorten the system delay.

Disclosures

The authors report no relationships that could be construed as a conflict of interest.

References

- [1] P.G. Steg, S.K. James, D. Atar, L.P. Badano, C. Blömstrom-Lundqvist, M.A. Borger, et al., ESC guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation, *Eur. Heart J.* 33 (2012) 2569–2619.
- [2] C.J. Terkelsen, J.T. Sørensen, M. Maeng, L.O. Jensen, H.-H. Tilsted, S. Trautner, et al., System delay and mortality among patients with STEMI treated with primary percutaneous coronary intervention, *JAMA* 304 (2010) 763–771.
- [3] C.J. Terkelsen, J.F. Lassen, B.L. Nørgaard, J.C. Gerdes, S.H. Poulsen, K. Bendix, et al., Reduction of treatment delay in patients with ST-elevation myocardial infarction: impact of pre-hospital diagnosis and direct referral to primary percutaneous coronary intervention, *Eur. Heart J.* 26 (2005) 770–777.
- [4] S. Whitaker, T. Baldwin, M. Tahir, O. Choudhry, A. Senior, S. Greenfield, Public knowledge of the symptoms of myocardial infarction: a street survey in Birmingham, England, *Fam. Pract.* 29 (2012) 168–173.
- [5] D.B. Diercks, K.P. Owen, M.C. Kontos, A. Blomkalns, A.Y. Chen, C. Miller, et al., Gender differences in time to presentation for myocardial infarction before and after a national women's cardiovascular awareness campaign: a temporal analysis from the Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes with Early Implementation (CRUSADE) and the National Cardiovascular Data Registry Acute Coronary Treatment and Intervention Outcomes Network-Get with the Guidelines (NCDR ACTION Registry-GWTG), *Am. Heart J.* 160 (2010) (80–87.e3).
- [6] W.B. Gibler, P.W. Armstrong, E.M. Ohman, W.D. Weaver, A.L. Stebbins, J.M. Gore, et al., Persistence of delays in presentation and treatment for patients with acute myocardial infarction: the GUSTO-I and GUSTO-III experience, *Ann. Emerg. Med.* 39 (2002) 123–130.
- [7] H. Meischke, A. Kuniyuki, Y. Yasui, D.J. Bowen, R. Andersen, N. Urban, Information women receive about heart attacks and how it affects their knowledge, beliefs, and intentions to act in a cardiac emergency, *Health Care Women Int.* 23 (2002) 149–162.
- [8] A. Regueiro, R. Tresserras, J. Goicolea, A. Fernández-Ortiz, C. Macaya, M. Sabaté, Primary percutaneous coronary intervention: models of intervention in Spain, *EuroIntervention* 8 (Suppl. P) (2012) P90–93.
- [9] X. Bosch, A. Curós, J.M. Argimon, M. Faixedas, J. Figueras, F.X. Jiménez Fàbrega, et al., Modelo de intervenció coronaria percutànea primària en Catalunya, *Rev. Esp. Cardiol.* 11 (2011) 51–60.
- [10] M. Alcañiz-Zanón, A. Mompert-Penina, M. Guillén-Estany, A. Medina-Bustos, J.M. Aragay-Barbany, P. Brugulat-Guiteras, et al., New design of the Health Survey of Catalonia (Spain, 2010–2014): a step forward in health planning and evaluation, *Gac. Sanit.* 4 (2014) 338–340.