

Thoracic pain: public awareness and attitude

Miguel Correia, Ana Correia

Abstract

Introduction: In 2007, the campaign “Seja mais rápido que um enfarte” (be quicker than an infarction) was launched, to promote earlier recognition of symptoms and activation of the emergency number (112). **Objectives:** Characterization of public awareness about thoracic pain, trying to find out whether the campaign above had any kind of impact. **Methods:** Transversal study, using a sample of 109 people attending a clinical pathology laboratory who agreed to answer an assisted questionnaire. Among others it included questions about the content of the campaign referred

above and about attitudes concerning an episode of thoracic pain. **Results:** A small minority (27.5%) was effectively aware of the campaign and its contents. Only about half of the respondents reported calling 112 in case of sudden and persistent thoracic pain. **Conclusions:** This group awareness concerning the significance of thoracic pain and related attitudes seems still insufficient, justifying new campaigns.

Key words: Thoracic pain, population, knowledge, attitude.

INTRODUCTION

Acute myocardial infarction (AMI) is one of the main causes of morbidity and mortality in the world.¹

In many of these patients it is possible to limit the myocardial damage using reperfusion therapies in the appropriate moment.^{2,3} Reducing of time between the onset of symptoms and the reperfusion therapy became a priority and part of such delay occurs between the onset of symptoms and the decision of looking for medical help.²⁻⁴

Acknowledging the importance of such problem in Portugal, in 2007 was launched the campaign “be quicker than an infarction” to promote the early recognition of symptoms therefore the immediate activation of the coronary “green path” to the emergency medical number (112).^{5,6}

This way, it seems relevant to try to characterize the awareness and attitudes of the public regarding thoracic pain and the above-mentioned campaign, although it has not been found which during the

planning and carrying out this study any national publication approaching specifically such matter.

This work had as its main objective to identify the public awareness regarding typical symptoms of acute myocardial infarction and how to face a thoracic pain episode, trying to verify if there was any impact from the campaign “be quicker than an infarction” in such areas.

MATERIAL AND METHODS

Study description: this is a descriptive transversal study using data gathered through a questionnaire directed to users of a clinical analysis laboratory in greater Oporto.

Definition of the population and sampling process: The target population in this study is made up by the users of a clinical analysis laboratory in greater Oporto aged 18-years-old or over. The sampling was made according to a random systematic method, using as criteria the contact with users who have resorted to the laboratory premises in the predefined period of 30 days.

Data collection: the fieldwork was carried out from the 1st to the 31st May 2008 in the laboratory premises by the Clinical Analysis Technician. The process of gathering data was carried out through answers to a questionnaire, with help, which was asked to all users attending the laboratory in the days previously mentioned.

The questionnaire had several questions, which could be gathered in different groups (Fig. 1). The first ones were about socio-demographic characterization of those enquired. Another item targeted specifically

Cardiology Service. Hospital Center of Entre Douro e Vouga EPE
Health Sciences Faculty. Fernando Pessoa University
Received for publication on the 17th January 2011
Accepted on the 25th July 2011

Thoracic pain: awareness and attitudes – Questionnaire

1.
 - 1.1. Age: _____ years old
 - 1.2. Gender: M F
2.
 - 2.1. Academic background:

Illiterate	<input type="checkbox"/>
Primary Education	<input type="checkbox"/>
Basic Education	<input type="checkbox"/>
Secondary Education	<input type="checkbox"/>
University or Higher Education	<input type="checkbox"/>
 - 2.2 Average number of hours watching TV weekly: _____
Average number of newspapers/magazines read weekly: _____
3. Have you heard about the campaign “Be Quicker than an Infarction”? Yes No
 - 3.1. What is this campaign about:

Symptoms of myocardial infarction (“heart attack”) and attitudes to be taken	<input type="checkbox"/>
Medication to take at home when there is a suspicion of heart attack	<input type="checkbox"/>
History of public people who suffered a heart attack	<input type="checkbox"/>
I do not know the campaign content	<input type="checkbox"/>
4. Which of such symptom(s) may suggest a heart attack:

Thoracic pain (chest/back pain or tightness)	<input type="checkbox"/>
Dyspnea (shortness of breath)	<input type="checkbox"/>
Paresis of one limb (one limb feeling weak)	<input type="checkbox"/>
Severe headache	<input type="checkbox"/>
5. If you have a sudden chest pain lasting over 15 minutes and are at home, what would you do?

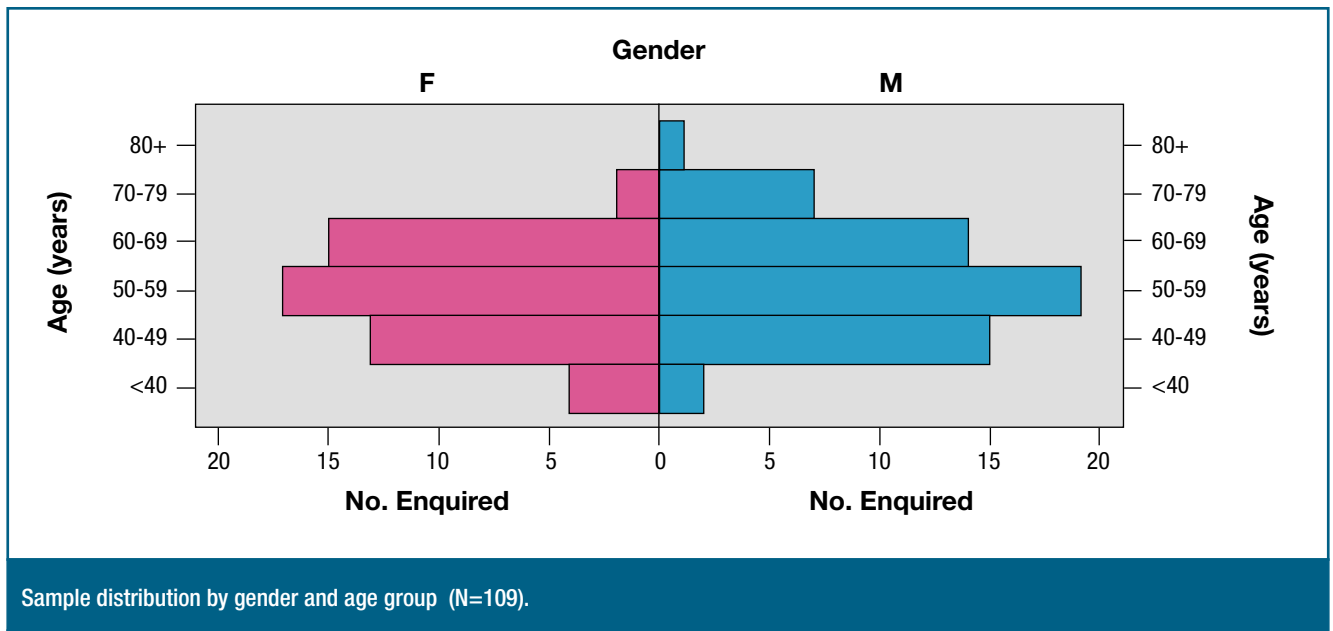
I take a pain killer and wait 1-2 hours	<input type="checkbox"/>
I call 112 at once	<input type="checkbox"/>
I do not call 112. I go straight to hospital by my own means	<input type="checkbox"/>

Integral version of the Questionnaire used in the study.

FIG. 1

the knowledge of the campaign *Be Quicker Than An Infarction*. Continuing the questionnaire there was a group of questions, where it was tried to measure the knowledge of those asked on acute myocardial infarction symptoms, being given the option to choose among several possibilities some clearly wrong.

This questionnaire ended with the question on which should be the attitudes of the enquired facing an episode of sudden thoracic pain. The creation of a questionnaire was made using the information carried out by the campaign *Be Quicker Than An Infarction*. To validate the used questionnaire, it was made a



Sample distribution by gender and age group (N=109).

FIG. 2

pre-test to evaluate its feasibility and acceptance with its application to 10 users of another clinical analysis laboratory of different age groups. Being a questionnaire with help to be filled in, it was made previously a brief training of the Clinical Analysis Technician who carried out the survey in order to giving them the ability to translate the used terms in the questionnaire in a way it would be understandable for the user, regarding their age group and academic qualifications.

The user approach was made in an individual way, in a reserved place, and the questionnaire was given after the user's approval, always after a short conversation where the targets were explained and confidentially was guaranteed on the data collected.

Data assessment: a data statistic analysis was made using the SPSS® 13.0 (Statistical Package for Social Sciences) software. The survey was essentially of a descriptive nature, aiming to characterize this group, mainly regarding the awareness of the campaign *Be Quicker Than An Infarction*, the knowledge of the typical symptoms of acute myocardial infarction and the attitude before thoracic pain episodes. However, it also tried to relate the nature of such attitudes with social and demographic variables mainly the awareness of the above-mentioned campaign. For such purpose the precise test of Fisher (discrete variables) and of Mann – Whitney (continuous variables with

non-moral distribution) being that the significant level considered was of $\alpha = 5\%$.

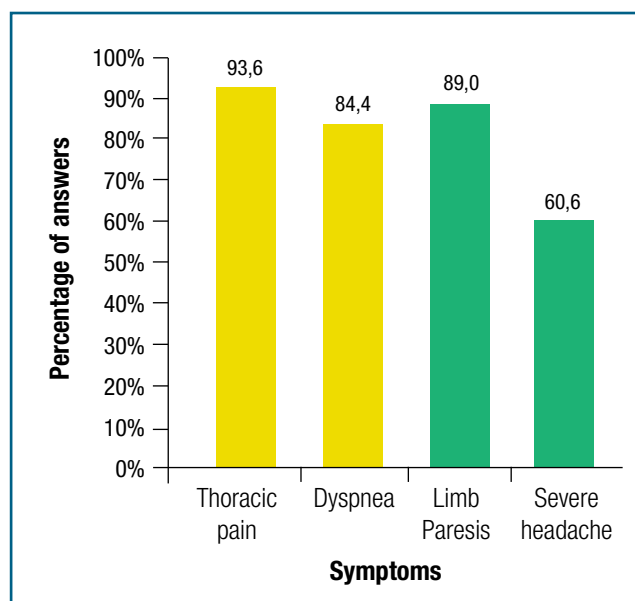
Considering that this was a sample of small dimensions, in order to make viable the application of statistical tests, it was chosen to dichotomize the discrete variables. For such purpose, it was considered regarding the attitudes when facing an episode of thoracic pain, to call immediately the 112 was the correct attitude and the other two were wrong. The same strategy was adopted regarding the awareness of the campaign *Be Quicker Than An Infarction*, when it was considered correct the option myocardial infarction symptoms and attitudes to take, and the remaining were wrong.

RESULTS

115 people who attended the laboratory in the mentioned period, were requested to answer a questionnaire. Only six people responded negatively. Therefore 109 questionnaires were carried out all of them considered valid. Due to the survey design it was not possible to characterize the non-respondents.

Demographic characterization (Fig. 2): the sample was made mainly by male individuals (53.2%), with an average of 55.3 (± 10.8) years old. The more prevalent age group corresponded to the fifth decade of life (33.0%).

Academic background and access to information:



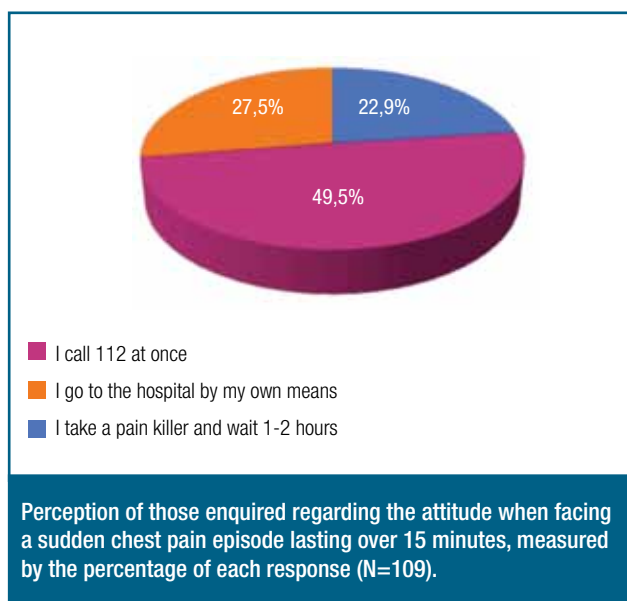
For each one of the available symptoms, percentage of enquired considering them typical for acute myocardial infarction (in green, the group of symptoms we know not be typical of this pathology) (N=109).

FIG. 3

in the sample considered we verified there was only one illiterate individual, presenting all the reminder different levels of academic background: 53.2% with primary education, 25.7% with basic education, 11.9% with secondary education and only 8.3% with the university background or higher education. Those enquired mentioned to read an average of 4.8 (± 2.8) magazines/newspapers per week and watching an average of 14.0 (± 2.4) hours of television per week.

Awareness of the campaign Be Quicker Than An Infarction: most of those enquired (63.3%) referred to recognize the above-mentioned campaign. When asked about the content, only 43.5% were capable of answering appropriately.

Knowledge of acute myocardial infarction typical symptoms: one of the items of the questionnaire was dedicated to identifying the typical symptoms suggesting an acute myocardial infarction, among 4 presented. It was verified that 93.6% of those enquired had identified thoracic pain and 80.4% dyspnea as typical symptoms. However 89% of the enquired took the view that a limb paresis was a typical symptom, the same thinking 60.6% regarding an episode of intense headache (Fig. 3).



Perception of those enquired regarding the attitude when facing a sudden chest pain episode lasting over 15 minutes, measured by the percentage of each response (N=109).

FIG. 4

Attitude facing a sudden thoracic pain episode: When asked what would they do facing a thoracic pain episode, evolving for over 15 min, only half of them (49.5%) has mentioned to call 112 immediately (Fig. 4).

Relationship between a thoracic pain episode attitude and other variable: In the enquired group who chose the right attitude before a thoracic pain episode, 51.4% knew appropriately the campaign content. Conversely, among those with an inappropriate attitude, only 35.3% were aware of the campaign contents, although a significant difference between the two groups was not seen. The same way, there were no significant statistically relationship between the attitude before a thoracic pain episode and the gender of those inquired, their academic background or the amount of newspapers read weekly. It was only verified an average age more advanced in the group of patients who chose to call 112 immediately, regarding the other ones, and this difference had a statistical significance (Table I).

DISCUSSION

Using reperfusion therapy is, at present, crucial in the treatment of acute coronary syndrome, with ST-segment elevation. Its efficacy is time-dependent, reducing as the time increases between the symptom onset and treatment.²

TABLE I

Relationship between the attitude towards a thoracic pain episode and other variables gathered.

Variable	Attitude facing a thoracic pain episode		
	Call 112	Other attitude	p
Average age (years)	57,7 (± 11,9)	52,9(± 9,2)	0,02
Gender (%)			
• Male	59,3%	47,3%	
• Female	40,7%	52,7%	0,2
School level (%)			
• Primary/Basic	77,8%	81,5%	
• Secondary/Higher Education	22,2%	18,5%	0,8
Average number of newspapers read weekly	4,7 (± 2,6)	4,9 (± 2,9)	0,6
Awareness of the campaign content (%)			
• Appropriate	51,4%	35,3%	
• Inappropriate	48,6%	64,7%	0,2

Reperfusion efficacy determining the degree of myocardial necrosis has significant prognosis implications.² In general it is estimated that for each 30 min delay between the symptoms onset and the reperfusion therapy, mortality in the first year after the event increases 7.5%.³

The time elapsed from the symptoms onset and the effective use of reperfusion strategies is divided in the pre-hospital component (time from the symptoms onset to the arrival in hospital) and in a intra-hospital component (time elapsed from hospital admission and that effective use of perfusion therapy), ideally the total time of ischaemia should be under 120 min.²

Studies carried out in different parts of the world (Table II) in the last few years has shown that in patients admitted by acute coronary syndromes, the pre-hospital time is still very prolonged, being well beyond what should be desirable.⁴

Several studies have shown a significant portion of such delay corresponds to the time from the symptoms onset to the decision of looking for medical help which is above 80% of the pre-hospital time in some of the series.⁸⁻¹³

An attempt has been made to interfere with this situation with appropria-

te awareness campaigns. This way, in 2007 it was launched in Portugal the campaign *Be Quicker Than An Infarction* with the main target of informing the public about the signs and symptoms of acute myocardial infarction and the need of calling 112 immediately when occurring, activating therefore the coronary "green path". It was mentioned the aim of raising public awareness to the question of time, crucial in such situation.^{5,6}

Nevertheless, when such study was carried out, no published studies were found in Portugal trying

to evaluate public awareness regarding the problems mentioned in the already described campaign. After this study was made, we came across the results of a study focusing similar problems, sponsored by the Health National Institute (INSA) occurring in the second quarter of 2008.⁷ This had as the main target to evaluate public awareness regarding the alarm signs for acute myocardial infarction and cerebral vascular accident (CVA/stroke), having enquired 773 people residing in Portugal mainland by telephone interview.⁷

In our work, from the beginning, it was attempt-

TABLE II

Pre-hospital time characterization in several studies of patients admitted due to acute coronary syndromes, carried out in different parts of the world

Year	Number of Patients	Country	Pré-hospital time (h)
2001	526	Italy	3,5 h
2003	194	USA	3,0 h
2004	250	Denmark	2,0 h
2006	100	New Zealand	4,0 h
2006	178	Turkey	2,0 h
2007	1939	Sweden	2,5 h

Adapted from Herlitz et al.⁴

TABLE III

Percentage of enquired individuals in three different studies considering chest pain and/or dyspnea as typical symptoms of acute myocardial infarction

	Our study	INSA ⁷ Study (Portugal, 2008)	CDC ¹⁵ Study (USA, 2005)
Chest pain	93,6%	84,4%	92,1%
Dyspnea	84,4%	67,0%	93,4%

CDC – Center for Diseases Control; INSA – Instituto Nacional de Saúde (Health National Institute).

ted to evaluate how deep this message had reached the surveyed group. It should be remembered that almost all enquired were literate and most seemed to be exposed regularly to the information provided by the media, and considering referred reading habits and TV watching. This way, considering that the campaign was widely published, it is not surprising that most people would recognize it (63.3%) although it still remained an important minority who apparently was totally unaware of it. However it should be highlighted that in another Portuguese study (INSA) quoted,⁷ the rate of enquired who had heard about the campaign was much lower: only 24.4% recognized the campaign *Be Quicker Than An Infarction*, with an identical proportion between the different places of the country. Continuing the analysis in our group, we verify that from those who recognized the name of the campaign, only 43.5% had appropriate knowledge of its content. This means that only a minority of those inquired knew effectively the campaign and its content. Therefore the message carried out by the campaign apparently did not have the adequate penetration in this group, in spite of the demographic characteristics namely regarding the age group, would be a convenient target group. The results are even the worst in the other study mentioned, with national scope, where most of the inquired did not even know the name of their campaign.

It was also tried to evaluate the knowledge of users regarding the main suggestive symptoms of acute myocardial infarction. We verify that almost the totality of those enquired have identified thoracic pain as a typical symptom, an identical percentage of which is described in other works in Western countries.^{7,14,15} However it was seen some confusion in those enquired in such area, due to a higher percentage

(above all other works)¹⁶ would consider symptoms as a limb paresis or intense headaches were also typical of acute myocardial infarction. *Table III* shows the percentage of enquired who identified thoracic pain or dyspnea as typical acute myocardial infarction symptoms in three different studies: our study, INSA study (Portugal) and the study of the Center for Disease Control (USA).

When asked about the attitudes that they would have before a sudden episode of thoracic pain lasting over 15 min, only half of them referred the attitudes deemed appropriate, conveyed by the studied campaign which should be to call immediately the medical emergency hotline (112). In spite of this percentage being lower than the mentioned in other works:^{7, 14 - 16} it should be mentioned that in other studies the designation of the pathology in the question was clearly seen and it was not used a clinical setting as in our case. The INSA study has revealed that 82% of those enquired mentioned to call 112 as first attitude facing a myocardial infarction but only 40% knew the alarm symptoms for acute myocardial infarction and would mention to call 112 as the first attitude.⁷

We verified that in our study a higher tendency to use the emergency hotline in older people and in those who knew appropriately the message of the campaign *Be Quicker Than An Infarction*, in spite of this last case not having reached statistical significance.

It is worth nothing that some works¹⁶ show that the appropriate knowledge of facts related with health, namely with thoracic pain is not an enough condition to an appropriate action when confronted with such situation. There are other complex factors intervening in the decision process, namely the previous experience with that situation or similar situations, and that should be considered when carrying out awareness campaigns to the public in such areas.

As a main limitation of this work we highlight the reduced size of the study group, carried out in a specific environment, affecting its representativeness and obtaining significant statistically rapports. On the other hand we know the questionnaire mentioned hypothetical situations, therefore the answers may not reflect appropriately the decisions taken in an actual emergency situation.

In conclusion, in the studied group, we verified little penetration of the main message of the campaign *Be Quicker Than An Infarction* with an inappropriate knowledge by an important percentage of those en-

quired regarding the attitudes to take before a thoracic pain episode. That can justify new studies on this matter and future awareness actions. ■

References

1. Thygesen K, Alpert JS, White HD. Universal definition of myocardial infarction. *Eur Heart J* 2007; 28: 2525-2538.
2. Werf FV, Bax J, Betriu A, Blomstrom-Lundqvist C, Crea F, Falk V, Filippatos J, Fox K, Huber K, Kastrati A, Rosengren A, Steg PG, Tubaro M, Verheugt F, Weidinger F, Weis M. Management of acute myocardial infarction in patients presenting with persistent ST-segment elevation. *Eur Heart J* 2008; 29: 2909-2945.
3. De Luca G, Suryapranata H, Ottervanger JP, Antman EM. Time delay to treatment and mortality in primary angioplasty for acute myocardial infarction: every minute of delay counts. *Circulation* 2004; 109(10): 1223-1225.
4. Herlitz J, Wireklintsundström B, Bång A, Berglund A, Svensson L, Blomstrand C. Early identification and delay to treatment in myocardial infarction and stroke: differences and similarities. *Scand J Trauma Resusc Emerg Med* 2010; 18: 48.
5. Seja mais rápido que um enfarte ou AVC. Portal da Saúde 2007. Disponível em: www.portaldasaude.pt/portal.
6. Intervenção do Ministro da Saúde na divulgação da campanha das vias verdes coronárias e AVC do Alentejo. Portal da Saúde 2007. Disponível em: www.min-saude.pt/portal.
7. Branco MJ, Nunes B. Sinais de Alarme de Enfarte Agudo do Miocárdio e Acidente Vascular Cerebral: uma observação sobre conhecimentos e atitudes. Relatório do Instituto Nacional de Saúde Dr. Ricardo Jorge (2008). Disponível em: www.insa.pt.
8. Rasmussen CH, Munck A, Kragstrup J, Haghfelt T. Patient delay from onset of chest pain suggesting acute coronary syndrome to hospital admission. *Scand Cardiovasc J* 2003; 37(4): 183-186.
9. Berton G, Cordiano R, Palmieri R, Guarnieri G, Stefani M, Palatini P. Clinical features associated with pre-hospital time delay in acute myocardial infarction. *Ital Heart J* 2001; 2(10): 766-771.
10. Taylor DM, Garewall D, Carter M, Bailey M, Aggarwall A. Factors that impact upon the time to hospital presentation following the onset of chest pain. *Emerg Med Australas* 2005; 17(3): 204-211.
11. Ingarfield SL, Jacobs IG, Jelinek GA, Mountain D. Patient delay and use of ambulance by patients with chest pain. *Emerg Med Australas* 2005; 17(3): 191-192.
12. Mumford AD, Warr KV, Owen SJ, et al. Delays by patients in seeking treatment for acute chest pain: implications for achieving earlier thrombolysis. *Postgrad Med J* 1999; 75: 90-94.
13. Ell K, Haywood LJ, Sobel E, Deguzman M, et al. Acute chest pain in African Americans: factors in the delay in seeking emergency care. *American Journal of public Health* 1994; 84(6): 965-970.
14. Greenlund KJ, Keenan NL, Gikes WD, Zheng LJ, et al. Public recognition of major signs and symptoms of heart attack in seventeen states and the US Virgin Islands, 2001. *Am Heart J* 2004; 147(6): 1010-1116.
15. Centers for Disease Control and Prevention (CDC). Disparities in Adult Awareness of Heart Attack Warning Signs and Symptoms --- 14 States, 2005. *MMWR Morb Mortal Wkly Rep* 2008; 57(7): 175-179.
16. Cytryn KN, Yoskowitz NA, Cimino JJ, Patel VL. Lay public's knowledge and decisions in response to symptoms of acute myocardial infarction. *Adv in Health Sci Educ* 2009; 14: 43-59