Factors influencing the use of ambulance among patients with acute coronary syndrome: results of two centers in Turkey

Akut koroner sendromlu hastalarda ambulans kullanımını etkileyen faktörler: Türkiye'de iki merkeze ait sonuçlar

Burcu Demirkan, Meltem Refiker Ege[1], Pınar Doğan, Esra Gücük İpek, Ümit Güray, Yeşim Güray

Clinic of Cardiology, Türkiye Yüksek İhtisas Hospital, Ankara-*Turkey*
[1]Clinic of Cardiology, Yalova State Hospital, Yalova-*Turkey*

ABSTRACT

Objective: In this study, we aimed to identify the factors influencing the use of ambulance among patients admitted to two Turkish hospitals with acute coronary syndrome (ACS).

Methods: Overall, 330 with a mean age of 55±13 years, hospitalized patients with ACS at 2 different hospitals were included in this prospective cohort study. The factors influencing the use of ambulance hospital were investigated through a questionnaire. The comparisons were made between two groups regarding use of ambulance. The predictors of the use of ambulance were determined using multiple logistic regression analysis.

Results: Despite the high rate of knowing the emergency service number of "112", of the 330 patents, only 96 (29%) used ambulance. Ambulance users had shorter arrival duration with median of 60 min vs 120 min (p=0.03). Presenting with ST elevation myocardial infarction (OR=3,127, 95% CI: 1.555-6.2877, p<0.001), severity of chest pain (OR=2.665, 95% CI: 1.938-3.665, p<0.001), presence of accompanying symptoms such as dyspnea (OR= 5.510, 95% CI: 2.614-11.614, p<0.001), dizziness (OR=4.172, 95% CI: 1.901-9.154, p<0.001) and vomiting (OR=3.756, 95% CI: 1.521-9.272, p=0.004), knowledge of cardiac risk factors (OR=10.512, 95% CI: 4.497-24.572, p<0.001) or chest pain related to heart attack and the importance of quickly seeking for medical care by calling ambulance (OR= 4.184, 95% CI: 2.528-6.926, p<0.001) are the factors associated with ambulance use.

Conclusion: Using ambulance was in a very low rate among our study patients with ACS. Severity of symptoms, type of ACS and knowledge are seemed to be related with increased ambulance use. Informative health educational programs can be organized to achieve a behavioral change in using of ambulance. *(Anadolu Kardiyol Derg 2013; 13: 516-22)*

Key words: Ambulance use, acute coronary syndrome, regression analysis

ÖZET

Amaç: Ambulans kullanılması akut koroner sendromlu (AKS) hastaların hastaneye nakli sırasında sadece hızlı değil, aynı zamanda güvenilir ulaşım şeklidir. Bu çalışma AKS tanısı ile iki ayrı merkeze başvuran hastalarda ambulans kullanımını etkileyen faktörlerin belirlenmesi amaçlanmıştır.

Yöntemler: Türkiye'de 2 ayrı hastanede AKS tanısı ile hastaneye yatırılan ve yaş ortalaması 55±13 olan toplam 330 hasta bu prospektif kohort çalışmaya dahil edilmiştir. Hastaların hastaneye ulaşım şeklini etkileyen faktörler bir anket formu aracılığıyla araştırılmıştır. Hastalar ambulans kullanıp kullanmadıklarına göre iki gruba ayrılarak karşılaştırmalar yapılmıştır. Ambulans kullanımını belirleyen faktörler çoklu lojistik regresyon analizi ile değerlendirilmiştir.

Bulgular: Acil servis numarası "112"nin yüksek oranda biliniyor olmasına rağmen, 330 hastanın sadece 96'sı (%29) ambulans kullanırken, geri kalan 234 (%71) hasta kendi ulaşımını sağlamıştır. Ambulans kullananların hastaneye ulaşım süreleri (ortanca 120 dakikaya karşılık 60 dakika olarak) daha kısa olmuştur (p=0,03). ST yükselmeli miyokart enfarktüsü ile başvurma (OR=3,127, %95 GA: 1,555-6,2877, p<0,001), göğüs ağrısının şiddetli olması (OR=2,665, %95 GA: 1,938-3.665, p<0,001), eşlik eden dispne (OR=5,510, %95 GA: 2,614-11,614, p<0,001), baş dönmesi (OR=4,172, %95 GA: 1.901-9.154, p<0,001) ve kusma (OR=3,756, %95 GA: 1,521-9,272, p=0,004) gibi semptomların bulunması, kardiyak risk faktörlerini biliyor olmak (OR=10,512, %95 GA: 4,497-24,572, p<0,001) ve kalp krizi ile ilişkili olan göğüs ağrısını ve bu durumda hızlıca tıbbi yardım için ambulans çağrılmasının önemini biliyor olmak (OR=4,184, %95 GA: 2,528-6,926, p<0,001) ambulans kullanımını belirleyen faktörlerdir.

Sonuç: Türkiye'de AKS'da hastaların hastaneye ulaşım için ambulans kullanımı oldukça düşük orandadır. Semptomların ciddiyeti, AKS tipi ve bilgi düzeyi ambulans kullanımını arttıran faktörler olarak görülmektedir. Hastalarda ambulans kullanımına yönelik davranışsal değişiklik oluşturmak ve ambulans kullanımını arttırmak için aydınlatıcı sağlık eğitim programları düzenlenebilir. *(Anadolu Kardiyol Derg 2013; 13: 516-22)*

Anahtar kelimeler: Ambulans kullanımı, akut koroner sendrom, regresyon analizi

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Introduction

For acute coronary syndromes (ACS); urgent referral to hospital is essential to be evaluated for the need of reperfusion therapies and patients should be taken under medical supervision to prevent fatal arrhythmic complications (1). Although guidelines recommend the initiation of reperfusion therapy within 90 minutes after onset of symptoms, undesirable delays mainly based on patient's decision time to seeking medical care still occur (2-4). Moreover; using private transport rather than an ambulance is an unsafe way of transportation for ACS patients and may also increase the time to arrival at hospital (5). Previous studies from different countries focusing on the contributing factors related to the use of ambulance documented several demographic, social and clinical features determining the patient's choice of ambulance use (5-9). However the data of our own country does not exist.

In Turkey widespread use of ambulance service is getting increased every day. The system is activated by calling the telephone number "112". The ambulance transport carries out with the supervision of medical staff with the equipment of cardiac monitoring and defibrillation system. The center of 112 emergency services also refers the patient with the suspect of ACS to the nearest medical center with coronary care unit (CCU).

In this study we aimed to investigate the factors influencing the ambulance use among the patients with ACS at two centers in Turkey by means of a questionnaire.

Methods

Study design and population

This prospective, observational cohort study consisted of 330 hospitalized patients with ACS at 2 different hospitals of Turkey; Yalova State Hospital (n=108, 33%) and Türkiye Yüksek İhtisas Education and Research Hospital (n=222, 67%). One of the hospitals was a state hospital without the capability of percutaneous coronary intervention (PCI) and located in the west region of Turkey. The other one was an education and research hospital with the capability of PCI for 24 hours and located in Ankara, the capital city of Turkey. The study was conducted from November 2010 to May 2011. Patients were included if they had chest pain or angina equivalent symptoms, met the definition of ACS and were admitted to coronary care unit (CCU). The patients with unstable hemodynamics, language difficulties and who did not accept to answer the questionnaire were excluded from the study. Additionally we might miss some of patients because of excessive overload of the medical staff.

When patients were free from chest pain and hemodynamically stable, they were asked to participate in the study.

The study was approved by the local ethics committee and patients were included after giving informed consent to participate.

Data collection

A questionnaire, which was formed by the investigators of the study according to the previous studies, was used (3, 4, 6, 7). The questionnaire was prepared in order to assess patients' demographic, social and clinical characteristics, characteristic and severity of chest pain, presence of accompanying symptoms, the time between the onset of symptoms and arrival to the hospital and mode of transport to the hospital. If the patient was referred to the study hospitals from another medical center, the mode of transport to the first center was taken into consideration because we indeed wanted to evaluate the patients' own choices rather than the guidance of the medical personnel about the transport mode.

The electrocardiographic findings, cardiac biomarkers and final diagnosis were noted from medical records. The prior history of coronary artery disease (CAD) and cardiac risk factors were obtained from the patients or past medical records. After providing the stabilization of the patient, within the first days of hospitalization, the questionnaire was completed.

Definitions

The definition of ACS was made according to the detection of rise of cardiac biomarkers (preferably troponin) with at least one value above the 99th percentile of upper reference limit together with symptoms of ischemia or ischemic changes on electrocardiogram (ECG). If new ST elevation 0.2 mV in V2-3 or ≥0.1 mV in other contiguous two leads were detected the diagnosis of acute ST-elevation myocardial infarction (STEMI) and if new horizontal or down-sloping ST depression ≥0.05 mV; and/or T inversion ≥0.1 mV in two contiguous leads the diagnosis of non-ST elevation myocardial infarction (NSTEMI) were made (10). Intensity of chest pain was graded on a 10 point scale (0=no pain, 10=unbearable pain) by patients.

A prior MI, presence of stable angina pectoris, previous PCI or previous coronary artery bypass graft surgery were recorded as history of CAD.

Hypertension (HT) was defined as blood pressure ≥140/90 mmHg or being on treatment, diabetes mellitus (DM) was defined as fasting blood glucose≥126 mg/dL on two occasions or being on treatment (11, 12).

Statistical analysis

Data were analyzed using SPSS software (SPSS version 17.0, SPSS Inc, Chicago, USA). Continuous data were expressed as mean±standard deviation and categorical data were shown as percentages. Continuous variables with normal distribution were compared by Student's t-test, those without normal distribution were compared by Mann-Whitney U test and categorical data via Chi-square test. All tests of statistical significance were two-tailed and $p<0.05$ were considered significant. Variables, found to have significant differences in univariate analysis were incorporated in a multiple logistic regression model for determining the predictors of using ambulance.

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Results

General characteristics

Total 330 patients with a mean age of 55±13 years were included to the study. Seventy four percent of the patients were male with a mean age of 55±13 years and 26% of them were female with a mean age of 58±12 years. The comparisons were made between two groups regarding ambulance use or not. The baseline characteristics of the patients in the two groups were listed in Table 1. Only education level differed between the two groups. The patients who did not use ambulance had lower education level (p<0.01). There were no significant differences between the two groups respect to age, gender, marital status, distance to hospital, accompanying with a family member or a friend, presence of cardiac risk factors and presence of previous history of CAD.

Clinical characteristics

Patients who chose ambulance for transport had more severe chest pain (p<0.001) and frequent presence of accompanying symptoms such as dyspnea (p<0.001), dizziness (p<0.001), syncope (p<0.001), nausea (p=0.02) and vomiting (p=0.001) when compared to the patients who did not use ambulance. Although presence of preinfarction angina and having radiating chest pain tended to be more frequent in the ambulance users' group, however, these did not reach a statistical significance. Presenting with STEMI (66%) was more frequent than NSTEMI (51%) in ambulance users comparing to the patients who did not use (p=0.02) (Table 2).

Knowledge

For the whole study group, 81% of the patients indicated that they knew the emergency telephone number, "112". However, only 96 patients with the diagnosis of ACS (29%) went to hospital by ambulance. Thirty-two percent of the patients who knew the number-112 used ambulance for transportation while the remaining (183 patients- 68%) preferred self-transport.

Among the patients who used ambulance having the knowledge about both risk factors for CAD (p<0.001) and chest pain related to heart attack and the importance of quickly seeking for medical care by calling ambulance (p<0.001) were also significantly higher (Table 3).

Transport to the hospital

Less than one-third of the study patients (n=96, 29%) used ambulance for transport to the hospital. Ambulance users had shorter arrival duration with median of 60 minutes vs 120 minutes (p=0.03). Whatever the mode of transport was, 95% (n=313) patients had an accompanying family member or a friend with him/her during transport. Most of the patients (n=234, 71%) preferred other ways of transport for reaching hospital. The most frequent reason for not choosing an ambulance was that the patients did not consider the symptoms to be cardiac origin and serious (40%). Although the rest of the patients perceived the symptoms as serious, they did not use ambulance due to the other reasons shown in Figure 1.

Among patients who did not use ambulance, 37% were given a lift by a family member, a neighbor or a friend, 26% took a taxi, 14% drove own car, 12% chose public transport and 11% came to the hospital by walking (Fig. 2).

Factors associated with ambulance use

In multiple logistic regression analysis; presenting with STEMI, severity of chest pain, presence of accompanying symptoms such as dyspnea, dizziness and vomiting are indepen-

Table 1. The comparison of the demographic characteristics, situational factors and cardiac risk factors of the patients regarding ambulance use

Baseline characteristics	All (n=330)	Ambulance (n=96)	No ambulance (n=234)	*p
Age, years	55±12	54±12	56±13	0.3
Male gender, n (%)	243 (74)	66 (69)	177 (76)	0.2
Marital status (married or living with family), n (%)	288 (87)	81 (84)	207 (89)	0.3
Education level (Primary school), n (%)	174 (53)	42 (44)	132 (56)	0.04
Distance to the hospital > 5 km, n (%)	165 (50)	42 (44)	123 (53)	0.1
Accompanying with a family member or a friend, n (%)	313 (95)	88 (92)	225 (96)	0.1
Hypertension, n (%)	141 (43)	48 (50)	93 (40)	0.09
Diabetes mellitus, n (%)	81 (25)	30 (31)	51 (22)	0.07
Hyperlipidemia, n (%)	117 (36)	36 (38)	81 (35)	0.6
Current smoker, n (%)	192 (58)	57 (59)	135 (58)	0.8
Previous CAD history, n (%)	117 (36)	39 (41)	78 (33)	0.3
Time between the onset of symptoms and arrival at first medical center (min)	90 (30-210)	60 (40-120)	120 (30-240)	0.03

Data are presented as mean±standard deviation, number (percentage) and median (25th-75th percentile).

*Student's t-test, Mann-Whitney U test and Chi-square test

CAD - coronary artery disease

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Table 2. Comparison of characteristics of the current cardiac event and symptoms between the ambulance users and not users

Characteristics of current cardiac event and symptoms	All (n=330)	Ambulance (n=96)	No ambulance (n=234)	*p
Type of ACS (STEMI), n (%)	183 (56)	63 (66)	120 (51)	0.02
Chest pain, n (%)	306 (93)	87 (91)	219 (94)	0.4
Severity of chest pain, (scale 0-10)	7.1±1.3	7.9±1.1	6.8±1.3	<0.001
Having radiating chest pain, n (%)	192 (58)	63 (66)	129 (55)	0.08
Dyspnea, n (%)	82 (25)	37 (39)	45 (19)	<0.001
Palpitation, n (%)	72 (22)	27 (28)	45 (19)	0.08
Dizziness, n (%)	81(25)	42 (44)	39 (17)	<0.001
Syncope, n (%)	12 (4)	9 (9)	3 (1)	<0.001
Nausea, n (%)	123 (37)	45 (47)	78 (33)	0.02
Vomiting, n (%)	57 (17)	27 (28)	30 (13)	0.001
Sweating, n (%)	198 (60)	54 (56)	144 (62)	0.4
Preinfarction angina, n (%)	141 (43)	48 (50)	93 (40)	0.08

Data are presented as mean±standard deviation and number (percentage).

*Student's t-test and Chi-square test.

ACS - acute coronary syndrome, STEMI - ST elevation myocardial infarction

Table 3. The comparison of the knowledge between the ambulance users and not users

Awareness about emergency and cardiac disease	All (n=330)	Ambulance (n=96)	No ambulance (n=234)	*p
Knowledge of emergency number 112, n (%)	267 (81)	84 (88)	183 (78)	0.06
Knowledge of risk factors of CAD, n (%)	162 (49)	60 (63)	102 (44)	<0.001
Knowledge of chest pain related to heart attack and the importance of quickly seeking for medical care by calling ambulance, n (%)	99 (30)	42 (43)	56 (24)	<0.001

Data are presented as number (percentage)

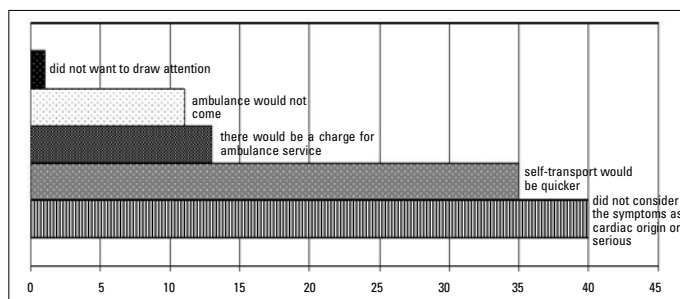*Chi-square test.

CAD - coronary artery disease

Figure 1. Reasons for not choosing an ambulance (%) among patients with acute coronary syndrome

Figure 2. Modes of transport to the hospital (%) among patients who preferred self-transport instead of using ambulance

dently associated with ambulance use (Table 4). Moreover having knowledge about risk factors of CAD and the chest pain related to heart attack and the importance of quickly seeking for medical care by calling ambulance were other factors that predicted the use of ambulance (Table 4).

Discussion

The primary finding of our study was that the ambulance use was in a very low rate among our patients with ACS although
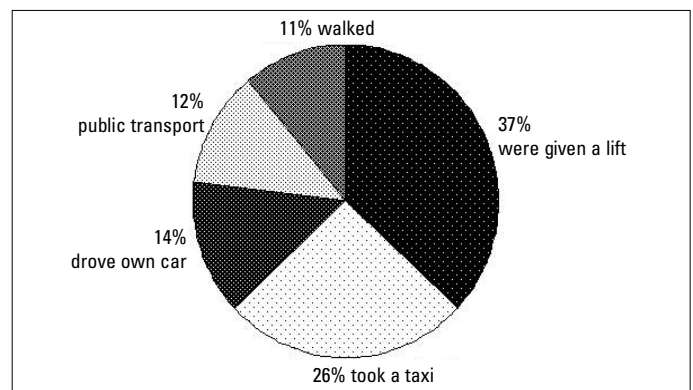
112- ambulance service is free of charge in Turkey. Almost less than one-third of the patients preferred ambulance for transportation and this rate was lower than the reported rates with previous studies from European countries and Australia but similar to the rates of China (4, 6-8). Instead of using ambulance most of our patients carried out the transportation to hospital in unsafe and inappropriate conditions for ACS. According to our findings;

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Table 4. The predictors of ambulance usage according to the results of multiple logistic regression analysis

Variables	Odds ratio	95% CI	p
Education level (Primary school)	0.984	0.491-1.975	0.9
Presence of STEMI	3.127	1.555-6.287	< 0.001
Severity of chest pain	2.665	1.938-3.665	<0.001
Dyspnea	5.510	2.614-11.614	<0.001
Dizziness	4.172	1.901-9.154	<0.001
Syncope	2.788	0.482-16.141	0.3
Nausea	0.696	0.329-1.474	0.3
Vomiting	3.756	1.521-9.272	0.004
Knowledge of risk factors of CAD	10.512	4.497-24.572	<0.001
Knowledge of chest pain related to heart attack and the importance of quickly seeking for medical care by calling ambulance	4.184	2.528-6.926	<0.001

Logistic regression analyses was used for independent variables, which were included if they were significantly different in the univariate analyses

CAD - coronary artery disease, STEMI - ST elevation myocardial infarction

while several factors such as severity of symptoms, type of ACS and knowledge were seemed to be related to the use of ambulance, interestingly previous history of CAD or cardiac risk factors were not associated with ambulance usage.

Contrary to the previous studies, we found no relationship with ambulance use regarding age and gender. In previous studies older patients more preferred ambulance for transportation to hospital due to having more comorbidities. In addition younger patients had a less tendency in interpreting their symptoms as cardiac origin (7, 13). Also another study documented that the ambulance users more often were women (3). However, neither age nor gender showed a relation to ambulance usage in our study.

Previous studies showed that patients with a history of CAD could recognize the symptoms of MI and this promoted emergency medical system contact (3, 14, 15). However; in contrast to our expectation and also previous studies; presence of previous history of CAD or having cardiac risk factors was not associated with the ambulance usage in our study. On the other hand, we found that having heard of the symptoms of heart attack and the importance of quickly seeking for medical care by calling ambulance or knowing cardiac risk factors were related to increased use of ambulance. Therefore, we suggested that even the patients with already the diagnosis of CAD or cardiac risk factors were not given enough information about what they should do in case of an acute chest pain.

Chest pain was the most common symptom for the entire study group (93%). Although having radiating chest pain to a region besides substernal or left precordium or presence of preinfarction angina did not differ between groups, in agreement to the previous studies, the patients who used ambulance defined more severe chest pain (6, 7). Additionally ambulance

users reported accompanying symptoms such as dyspnea, vertigo, syncope, nausea and vomiting more frequently. Therefore, severity of chest pain and presence of accompanying symptoms were seemed to increase the perception of the clinical status more serious and also increased calling ambulance in our study. In addition; presenting with STEMI, which might be together with more severe symptoms, was also associated with the increased use of ambulance.

For the patients who preferred self-transport in our study, perception of symptoms as not to be serious or cardiac origin (40%) was the most common reason of not calling an ambulance. This was also an important reason of pre-hospital delay in previous studies and most patients who did not feel sick enough to require ambulance, preferred to wait if the symptoms would go away (6). Previous studies emphasized that educating people about the symptoms of cardiac MI and motivating them to call ambulance in any suspicion of MI could reduce death and disability (6, 8, 16). Our study also supported these suggestions because we also found that the awareness about the symptoms of MI and the importance of quickly seeking of medical care increased ambulance usage.

On the other hand, the rest of our patients who did not use ambulance considered the symptoms to be serious but most of them (35%) thought that self-transport would be faster. Contrary to the assumption of these patients; we found that ambulance users arrived at hospital quicker with a median of 60 minutes than the patients who preferred self-transport. It may be valid that self-transport can be faster for whom live close to hospital but even in this case, unsafe mode of transport may still cause serious problems such as arrhythmic complications or cardiac arrest. Another point was that most of our study patients were accompanied by a family member or a friend during the transport to hospital (whether used ambulance or did not). This situation might give to patients a sense of confidence during self-transport. In addition, previous studies indicated that decision of seeking for medical help and calling ambulance was made commonly by family members or friends and only a very small number of patients called the emergency service number by themselves (6, 17). We also suggested that family members or relatives should be considered as a target group of health educational programs as well as the patients themselves.

Different from the previous studies; there were also some additional false convictions among our patients as causes for not using ambulance. One of them was that a payment would be required for ambulance service despite this service for emergencies is free of charge in Turkey. In addition, despite for a small proportion of the patients, there was still a belief that ambulance would not come after calling 112. These wrong believes might be due to limited ambulance service until recently in Turkey.

In acute MI; 25% of the deaths occur within the first hour (18). It is clear that acting quickly will save lives as well as increases the benefit of reperfusion therapies or PCI. Using ambulance provides safe transport conditions under a supervision of medical staff with the capability of cardiac monitoring and a defibrillation

system. Moreover directing the patient's transport to the nearest medical center with CCU by the center of 112-emergency service is a time saving effort. Therefore, it seems logical to compose educational programs with easily adaptable information of symptoms of acute MI and the importance of calling ambulance without wasting of time in such cases. At the same time, we have to eliminate some additional misunderstandings about the use of ambulance in Turkey. If everybody with chest pain calls ambulance, there may be some concerns about higher costs due to increasing demand and inappropriate use. However, previous studies did not report any unnecessary costs due to inappropriate use after the efforts to increase ambulance usage (6, 19).

Study of limitations

The major limitation of our study was that only hemodynamically stable patients who were able to interviews were included to the study. Because of this design; we missed a proportion of unstable patients who experienced adverse cardiac events due to unsafe transport conditions. However, a comparison of adverse cardiac events occurrence and their results in patients respect to the transport mode would be valuable data that could better emphasize the importance of ambulance use. Furthermore this situation might cause a selection bias.

Our findings reflected the data of two different hospitals at two different regions of Turkey with different capabilities. Nevertheless we suggested that our findings might not be generalized for whole Turkey because of the presence of multicultural structure and non-standard health care at different regions of Turkey. A larger study with the participation of a greater number of hospitals from different regions of Turkey should be conducted for more accurate evaluation.

Conclusion

In our study, a large proportion of patients with ACS are transported to hospitals in unsafe conditions instead of using ambulance. Several factors such as severity of symptoms, type of ACS and knowledge are seemed to be related to the use of ambulance. In addition there are some misunderstandings that must be changed in order to increase the use of ambulance. A better understanding of the reasons for not calling ambulance can provide a better planning of health educational programs for the formation of a behavioral change in using ambulance.

Conflict of interest: None declared.

Peer-review: Externally peer-reviewed.

Authorship contributions: Concept - B.D., M.R.E.; Design - B.D., M.R.E.; Supervision - B.D., M.R.E.; Resource - B.D., M.R.E.; Material - P.D., E.G.İ.; Data collection&/or Processing - P.D., E.G.İ.; Analysis &/or interpretation - Ü.G., Y.G.; Literature search - B.D., Y.G.; Writing - B.D., M.R.E.; Critical review - Ü.G., M.R.E.; Other - Ü.G., Y.G.

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Appendix 1.

Questionnaire for Ambulance Usage among Patients with Acute Coronary Syndrome

1. General characteristics:
*Patient ID:
*Age:
*Gender:
*Marital Status: (Married / Living with family / Alone)
*Education: None / Primary School / Secondary School / High School / University
*Hypertension: (Present (P) / Absent (A))
*Diabetes mellitus: (P/A)
*Hyperlipidemia: (P/A)
*Family history of premature CAD history: (P/A)
*Smoking habit: Current smoker / Not smoking
*History of CAD: (P/A)

2. Clinical characteristics:
*Diagnosis of current hospitalization (STEMI / NSTEMI)
*ECG: (ST elevation / depression / New LBBB / Other)

*Cardiac troponin: (Positive / Negative)
Symptoms:
*Chest pain: (P/A),
   Definition of patient
   Verbal scale of chest pain (1 for the mildest pain,….,10 for the most severe pain)
   Radiation of chest pain (P/A)
   Preinfarction angina (P/A)
*Dyspnea: (P/A)
*Palpitation: (P/A)
*Dizziness: (P/A)
*Syncope: (P/A)
*Nausea: (P/A)
*Vomiting: (P/A)
*Sweating: (P/A)

3. Transport to the hospital:
*The place where the chest pain or symptom started:
*Distance from this place to the hospital (first arrival):
*The time from onset of symptoms to the arrival to the emergency service (first arrival):
*Accompanying with a family member / neighbor / friend during transport: (P/A)
*Ambulance usage: (P/A)
*If ambulance was not used, what was the transport way?
*If ambulance was not used, what was the reason?

4. Knowledge:
*What's the number of emergency call in Turkey?
*What can be the risk factors for coronary artery disease?
*What can be the symptoms of heart attack?
*What should be done in case of a heart attack?

CAD - coronary artery disease, ECG - electrocardiogram, LBBB - left bundle branch block, NSTEMI - non-ST-elevation myocardial infarction, STEMI - ST elevation myocardial infarction