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Pre-hospital delay and its associated factors in patients with acute coronary syndrome

OBJECTIVE **To evaluate factors associated with pre-hospital delay in patients with acute coronary syndrome (ACS).** METHOD **A hospital-based cross-sectional survey was conducted in Sanglah Hospital during the period December 2017 to May 2018. For collecting data concerning factors associated with pre-hospital delay in ACS patients, interviews were conducted with a set of validated questionnaires. Spearman and contingency coefficient tests were used to analyze the data, and multiple logistic regression was employed to determine the dominant factors.** RESULTS **During the study period, a total of 230 participants with pre-hospital delay and 62 participants with no delay were enrolled in the study. Increased risk of pre-hospital delay was observed in women, in subjects with a monthly income less than 1.5 million and 1.6–2.5 million, senior high school the highest educational attainment, the Indonesian national health insurance, *badan penyelenggara jaminan sosial* (BPJS), private transportation, and behavioral factors, including taking a rest and self-medication. Lower risk of pre-hospital delay was found in men, entrepreneurs, those with monthly income 2.6–3.5 million and more than 3.5 million, higher (university) education, non-BPJS insurance, ambulance transportation, and use of emergency medical services. Logistic regression analysis revealed that the dominant risk factor for pre-hospital delay was patients taking a rest when suffering chest pain.** CONCLUSIONS **Taking a rest when suffering chest pain is the dominant factor associated with pre-hospital delay in patients with ACS.**

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Προνοσοκομειακή καθυστέρηση σε αρρώστους με οξύ στεφανιαίο σύνδρομο και συνοδοί παράγοντες

Περίληψη στο τέλος του άρθρου

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Although the management of acute coronary syndrome (ACS) is well established and has been updated periodically,[1,2] the mortality due to ACS is still high. Reports reveal that mortality figures between 1990 and 2020 were relatively high and are predicted to increase by approximately 29% in women and 48% in men in developed countries, while in developing countries, the number is predicted to increase by about 120% in women and 137% in men.[3] The high mortality is caused by several factors, including pre-hospital delay,[4] level of severity, and fatal complications.[5–7] Of those factors, pre-hospital delay is thought to have a pivotal role in influencing the high mortality. It is reported that one half to three-quarters of sudden deaths in ACS patients occurred outside of hospital or prior to arrival in the emergency department (ED),[8,9] and approximately 50% of cardiac deaths occured within the first 30 minutes of symptom onset.[10] This means that the time to treatment plays a crucial role in influencing the life or death of these

patients, and therefore, reducing the interval between symptom onset and initiation of medical treatment is a crucial factor for survival of ACS patients.

In the guidelines for the management of ACS,[1,2] it is suggested that the prognosis of patients with ACS is time-dependent, and poor prognosis is significantly correlated with delay in treatment. It is therefore crucial to determine the factors associated with pre-hospital delay. Studies in several countries have reported on pre-hospital delay. Prolonged delay in examination by a physician and transportation were the dominant factors in Denmark and New Zealand,[9,11] symptom recognition in the United Kingdom,[12] and healthcare resources in Egypt.[13] Because pre-hospital delay is mainly patient-related, ethnicity and cultural factors may play a role, as documented by Alshahrani et al.[14] Reporting in our country, Indonesia, with its various ethnicities and cultures, may therefore differ from the previous reports. A study in this context has never been performed in our country. Our study aimed to investigate the factors associated with pre-hospital delay in patients with ACS in the Sanglah General Hospital.

MATERIAL AND METHOD

Study design and participants

The hospital-based cross-sectional study was conducted in Sanglah General Hospital, Bali, Indonesia, during the period December 2017 to May 2018. Validated questionnaires from previous studies[9,11–13] were used to collect data from the participants. The questionnaires included demographic information and data on health insurance, transportation, healthcare-seeking behavior, and the patient's companion. The questionnaires were tested for reliability among 30 patients prior to use in the final study.

For participant recruitment, the purposive sampling method was used in accordance with inclusion criteria. The criteria were (a) first-time attack of ACS, (b) experiencing a sudden and or coronary-type chest pain, (c) clinically stable and recovered (no chest pain), and (d) hemodynamically stable, (e) able to recall the time the symptoms started and the time of calling for medical help, and events prior to hospital admission, and (f) able to complete the interview in Bahasa Indonesia. The diagnosis of ACS was established according to the standard protocols, chest pain verified by electrocardiographic criteria and or troponin T measurement. Patients with the following co-morbid conditions: renal failure, cancer, stroke, and ongoing infection or inflammatory conditions such as inflammatory bowel disease[15] were excluded from the study. Information related to demographic data, health insurance, transportation, healthcare-seeking behavior, and the patient's companion was collected using structured interviews. Patients were asked to describe the pain characteristics, location, related to cardiac or non-cardiac, duration, exacerbation factor, and relieving factors. Delay was defined as >120 min. Clinical data were retrieved from the medical records with the patients' consent.

The demographic data included age, gender, educational level, occupation, marital status, monthly income, and residence. The conversion of date of birth into actual age was used to measure the age. Educational level was indicated by the highest level of formal education completed. Occupation was divided into six types, including civil servant (working in the government sector), entrepreneur (working as traders in traditional markets or owning small-scale businesses), private sector worker (working in the private sector), unemployment, retirement, and police or soldier. Monthly income, the average of the money earned each month, was measured by asking the participants to choose the closest amount of money from a list.

Statistical analysis

Analysis was performed using the Statistical Package for Social Sciences software (SPSS for Windows, version 16, Chicago, USA). To evaluate reliability, Cronbach's alpha was calculated and the value of 0.7 was defined as the minimal cut-off for good internal consistency.[16] To evaluate data normality, the Kolmogorov-Smirnov test was used.[17,18] The correlation among variables was analyzed using Spearman's correlation coefficient, and for determining the dominant factors, multiple logistic regression with the enter method was used. A p value <0.05 was considered significant.

Ethical approval

The study was approved by the Institutional Review Board of Universitas Brawijaya, Malang, Indonesia. The investigation of our study conformed with the principles outlined in the Declaration of Helsinki.[19] Prior to the study, participants were explained about the aims, risks, and benefits of the study and signed an informed consent form. They were informed that they could quit at any time in the interview section. In our study, no incentive was given to the participants.

RESULTS

A total of 292 participants was recruited, among whom pre-hospital delay was observed in 230 participants. The characteristics of the participants are summarized in table 1. The majority of the participants was men (70.9%) with ST-elevation myocardial infarction (STEMI) (56.8%) and using the Indonesian state insurance, *badan penyelenggara jaminan sosial* (BPJS) (88.4%). More than one third of the participants were from Denpasar (41.4%), were university graduates (48.6%), and were working in the private sector (42.1%) with monthly income less than 1.5 million rupiah (55.8%). More than a half of the participants was accompanied by their son (53.8%), and using private transportation

Table 1. Factors associated with pre-hospital delay of patients with acute coronary syndrome (ACS) (n=292).

Characteristics		n (%)	Delay >120 min [n (%)]	Delay ≤120 min [n (%)]	Multiple logistic regresion			Spearman test	
					p	OR	95% CI	p	sr
Gender	Men	207 (70.9)	155 (74.9)	52 (25.1)	0.013	0.40	0.19–0.83	0.022	-0.135
	Women	85 (29.1)	75 (88.2)	10 (11.8)	0.013	2.52	1.21–5.23		
Age group (years)	≤35	23 (7.9)	20 (87.0)	3 (13.0)	0.324	1.87	0.54–6.52	0.686	-0.024
	36–45	36 (12.3)	26 (72.2)	10 (27.8)	0.308	0.66	0.30–1.46		
	46–55	79 (27.1)	64 (81.0)	15 (19.0)	0.568	1.21	0.63–2.31		
	56–65	80 (27.4)	59 (73.8)	21 (26.3)	0.199	0.67	0.39–1.23		
	>65	74 (25.3)	61 (82.4)	13 (17.6)	0.373	1.36	0.69–2.68		
Occupation	Civil servant	26 (8.9)	19 (73.1)	7 (26.9)	0.459	0.71	0.28–1.77	<0.0001	-0.219
	Entrepreneur	74 (25.3)	44 (59.5)	30 (40.5)	<0.0001	0.25	0.14–0.46		
	Private sector worker	123 (42.1)	103 (83.7)	20 (16.3)	0.078	1.70	0.94–3.08		
	Unemployed	26 (8.9)	25 (96.2)	1 (3.8)	0.051	7.44	0.99–56.03		
	Retired	41 (14.0)	37 (90.2)	4 (9.8)	0.062	2.78	0.95–8.12		
	Police/soldier	2 (0.7)	2 (100.0)	0 (0.0)	0.841	1.37	0.07–28.86		
Residence	Denpasar	121 (41.4)	97 (80.2)	24 (19.8)	0.623	1.16	0.65–2.06	0.481	0.041
	Badung	63 (21.6)	52 (82.5)	11 (17.5)	0.41	1.35	0.66–2.79		
	Tabanan	18 (6.2)	12 (66.7)	6 (33.3)	0.202	0.51	0.18–1.43		
	Gianyar	31 (10.6)	22 (71.0)	9 (29.0)	0.265	0.62	0.27–1.43		
	Klungkung	12 (4.1)	9 (75.0)	3 (25.0)	0.745	0.80	0.21–3.05		
	Bangli	4 (1.4)	3 (75.0)	1 (25.0)	0.853	0.81	0.08–7.89		
	Singaraja	19 (6.5)	16 (84.2)	3 (15.8)	0.551	1.47	0.41–5.22		
	Karangasem	18 (6.2)	14 (77.8)	4 (22.2)	0.916	0.94	0.30–2.96		
	Jembrana	5 (1.7)	4 (80.0)	1 (20.0)	0.946	1.08	0.12–9.84		
	Nusa Penida	1 (0.3)	1 (100.0)	0 (0.0)	0.902	0.82	0.03–20.30		
Marital status	Married	289 (99.0)	228 (78.9)	61 (21.1)	0.612	1.87	0.17–20.95	0.620	0.029
	Unmarried	3 (1.0)	2 (66.7)	1 (33.3)	0.612	0.54	0.05–6.00		
Monthly income (million)	0–1.5	163 (55.8)	146 (89.6)	17 (10.4)	<0.0001	4.60	2.48–8.55	<0.0001	0.451
	1.6–2.5	91 (31.2)	79 (86.8)	12 (13.2)	0.026	2.18	1.10–4.33		
	2.6–3.5	11 (3.8)	3 (27.3)	8 (72.7)	<0.0001	0.10	0.02–0.35		
	>3.5	27 (9.2)	2 (7.4)	25 (92.6)	<0.0001	0.01	0.01–0.06		
Education	Elementary school	33 (11.3)	30 (90.9)	3 (9.1)	0.083	2.95	0.87–10.01	<0.0001	0.227
	Junior high school	7 (2.4)	7 (100.0)	0 (0.0)	0.329	4.19	0.24–74.46		
	Senior high school	110 (37.7)	94 (85.5)	16 (14.5)	0.032	1.99	1.06–3.72		
	Higher education	142 (48.6)	99 (69.7)	43 (30.3)	<0.0001	0.33	0.18–0.61		
Type of ACS	UAP	112 (38.4)	93 (83.0)	19 (17.0)	0.161	1.54	0.84–2.80	0.153	0.084
	NSTEMI	14 (4.8)	12 (85.7)	2 (14.3)	0.519	1.65	0.36–7.58		
	STEMI	166 (56.8)	125 (75.3)	41 (24.7)	0.098	0.61	0.34–1.10		
Health insurance	BPJS	258 (88.4)	228 (88.4)	30 (11.6)	<0.0001	121.6	27.73–533.33	<0.0001	0.676
	Other	34 (11.6)	2 (5.9)	32 (94.1)	<0.0001	0.01	0.01–0.04		
Transportation	Ambulance	60 (20.5)	4 (6.7)	56 (93.3)	<0.0001	0.01	0.01–0.01	<0.0001	0.668
	Private transportation	214 (73.3)	209 (97.7)	5 (2.3)	<0.0001	113.46	40.98–314.11		
	Public transportation	18 (6.2)	17 (94.4)	1 (5.6)	0.128	4.87	0.64–37.32		
Healthcare-seeking behavior	EMS for MI	43 (14.7)	3 (7.0)	40 (93.0)	<0.0001	0.01	0.01–0.03	<0.0001	0.679
	Health facility	21 (7.2)	3 (14.3)	18 (85.7)	<0.0001	0.03	0.01–0.11		
	Taking a rest	191 (65.4)	188 (98.4)	3 (1.6)	<0.0001	88.03	26.32–294.41		
	Self-medication	34 (11.6)	33 (97.1)	1 (2.9)	0.023	10.22	1.37–76.27		
	Informing the relatives	3 (1.0)	3 (100.0)	0 (0.0)	0.667	1.92	0.10–7.72		
Patient's companion	Son	157 (53.8)	125 (79.6)	32 (20.4)	0.702	1.12	0.64–1.96	0.011	0.258
	Daughter	1 (0.3)	1 (100.0)	0 (0.0)	0.902	0.82	0.03–20.30		
	Husband	38 (13.0)	34 (89.5)	4 (10.5)	0.093	2.52	0.86–7.38		
	Wife	91 (31.2)	66 (72.5)	25 (27.5)	0.081	0.60	0.33–1.07		
	Other parties	5 (1.7)	4 (80.0)	1 (20.0)	0.946	1.08	0.12–9.84		

OR: Odds ratio, CI: Confidence interval, s: Correlation coefficient, ACS: Acute coronary syndrome, UAP: Unstable angina, NSTEMI: Non ST-elevation myocardial infarction, STEMI: ST-elevation myocardial infarction, BPJS: Badan penyelenggara jaminan sosial, EMS: Emergency medical services, MI: Myocardial infarction

(73.3%). Almost two thirds reported taking a rest before going to the ED (65.4%), Spearman testing showed that pre-hospital delay was correlated with gender, occupation, monthly income, education level, health insurance, transportation, healthcare-seeking behavior, and the patient's companion. Of these, health insurance ($p \leq 0.0001$; sr=0.676) and healthcare-seeking behavior ($p \leq 0.0001$; sr=0.679) were the dominant factors observed in pre-hospital delay. Lower risk of pre-hospital delay was observed in men (odds ratio [OR] 95% CI [confidence interval]: 0.40 [0.19–0.83], p=0.013), entrepreneur (OR 95% CI: 0.25 [0.14–0.46], p<0.0001), monthly income 2.6–3.5 million (OR 95% CI: 0.10 [0.02–0.35], p<0.0001) and more than 3.5 million (OR 95% CI: 0.01 [0.01–0.06], p<0.0001), higher (university) education (OR 95% CI: 0.33 [0.18–0.61], p<0.0001), non-BPJS insurance (OR 95% CI: 0.01 [0.01–0.04], p<0.0001), ambulance transportation (OR 95% CI: 0.01 [0.01–0.01], p<0.0001), and emergency use of medical services behavior (OR 95% CI: 0.01 [0.01–0.03], p<0.0001). Increased risk of pre-hospital delay was found in women (OR 95% CI: 2.52 [1.21–5.23], p=0.013), monthly income less than 1.5 million (OR 95% CI: 4.60 [2.48–8.55], p<0.0001) and 1.6–2.5 million (OR 95% CI: 2.18 [1.10–4.33], p=0.026), senior high school education (OR 95% CI: 1.99 [1.06–3.72], p=0.032), BPJS insurance (OR 95% CI: 121.6 [27.73–533.33], p<0.0001), private transportation (OR 95% CI: 113.46 [40.98–314.11], p<0.0001), taking a rest (OR 95% CI: 88.03 [26.32–294.41], p<0.0001) and self-medication behavior (OR 95% CI: 10.22 [1.37–76.27], p=0.023). Regression analysis revealed that the dominant risk factor for pre-hospital delay was patients with taking a rest when suffering chest pain. The factors associated with pre-hospital delay are summarized in table 1.

DISCUSSION

In this study most of the participants with ACS were men, but women had greater risk for pre-hospital delay than men. The increased risk of pre-hospital delay in women may be due to the fact that most of the women were housewives, who might have had a lack of understanding of the symptoms of ACS. A study by Noureddine and colleagues[20] revealed that men had a higher level of work and education, and may have better understanding concerning ACS and healthcare-seeking behavior. In other studies, women were shown to have a lack awareness concerning ACS[21] and a longer pre-hospital delay than men,[22] which agrees with the results of our study.

We found that participants with higher education level had a lower likelihood of pre-hospital delay. Educational level has been demonstrated to be directly proportional to healthcare-seeking behavior.[23] This means that low educational level is correlated to poor healthcare-seeking behavior, and vice versa. Others also have suggested that educational level could have a significant effect on the pattern of healthcare-seeking behavior,[24] and therefore this may affect pre-hospital delay. Although the fact that education constitutes a fundamental component of the healthcare-seeking behavior of patients, if the high education level is not accompanied by a high level of awareness and understanding, it may not be possible to avoid delays in arrival at the hospital.

In this study, entrepreneurs and participants with a higher monthly income had a lower risk of pre-hospital delay. Occupation and monthly income are integrated[25] and there is a tendency for participants with higher monthly income to have greater curiosity concerning their health condition, and thus, better health knowledge. The correlation between monthly income and health status has been reported,[26] and high income was demonstrated to have positive health effects. Moreover, studies showed that entrepreneurs had better self-regulation and awareness,[27] and health perspectives,[28] and it has been reported that self-regulation and awareness have a crucial role to determine health status and knowledge.[29] Because of having better understanding about health, especially ACS, therefore, entrepreneurs and participants with higher income had a lower risk of pre-hospital delay as reported in our study. These reasons might explain the correlation between pre-hospital delay, occupation, and monthly income in our study.

In this study, 88.4% of the participants used BPJS, the Indonesian national health insurance. Since first issued in 2013, our government has made the regulation that all Indonesians should use BPJS. However, because of some system defects, especially in an emergency situation, not all Indonesians have agreed to use BPJS. In an emergency situation, patients can visit the nearest hospital registered by BPJS for medical services. In this context, after following all standard BPJS procedures, patients are not required to pay anything. Some possible reasons for pre-hospital delay in participants using BPJS as reported in our study are as follows: first, BPJS procedures are not as simple as those of other insurance schemes, and may take a lot of time. A recent study reported that one of factors influencing the decrease in satisfaction level in the hospital was complicated BPJS procedures.[30] Second, in the ED, only emergency patients are served, and the emergency status is determined by doctor. In this condition, non-emergency patients may not be served, or they may be served but unable to use BPJS. Therefore, because of this system, most

of BPJS participants may have a reluctance to visit the ED unless they have a severe condition. Some studies have revealed that the poor emergency service was the most common problem complained of by patients.[31,32] Third, in our country, not all hospitals have a cardiologist. In this situation, referral may be required, and this may take a lot of time. The referral system in our country has been shown to have poor implementation, especially in the case of emergencies.[33]

Furthermore, although the policy concerning referral system has been well designed, it was reported that the system was unable to run adequately.[33] In the Jakarta Cardiovascular Center in Indonesia, the implementation for ACS referral system could not be performed properly.[34]

Our study also found that using private transportation increased the risk for pre-hospital delay. In our country, the preference for using private transportation is probably caused by inaccessibility and limited availability of public transportation. Moreover, the use of ambulances has not been well familiarized. This might be due to the limited number of ambulances and lack of emergency knowledge, especially in the context of ACS.

Regarding healthcare-seeking behavior, our results showed that taking a rest when suffering chest pain increased the risk for pre-hospital delay. Our results were consistent with those of Pitsavos and colleagues,[35] Banks and Dracup,[36] and Youssef and colleagues,[13] who all reported that the behavior of taking a rest could contribute to the delay in arrival at the ED. The reason why the patients took a rest when suffering chest pain is probably an inability to interpret their symptoms. Pitsavos and colleagues[35] showed that the misperception of the presenting symptoms gave rise to significant mistakes in taking an action, ending up in delay in receiving medical services. This explanation was supported by Farshidi and colleagues,[37] who found that approximately 34.3% of the patients experiencing arrival delay at the ED had wrong perceptions about the symptoms of ACS.

However, pre-hospital delay in patients with ACS is complex, and other factors should be considered. Besides taking a rest, this study showed that self-medication also contributed significantly to an increase in the risk of pre-hospital delay. These findings were consistent with those of Banks and Dracup.[36] In this context, misperception could be a crucial reason for pre-hospital delay, as revealed by Pitsavos and colleagues[35] and Farshidi and colleagues.[37] Moreover, in this situation, it appears to be a common habit that after consuming the medicines, the patients may take a rest to relieve the pain. As a result, pre-hospital delay may be unavoidable. Several studies[37–41] revealed that self-medication preference was a crucial factor contributing to pre-hospital delay in India, Iran, China, and Brazil.

The high rate of pre-hospital delay in our population is a serious issue. This rate was higher than those in previous reports.[37,39–41] It is therefore necessary for the Cardiology Organization to design specific steps for reducing pre-hospital delay, for example, by establishing periodical community health education. The educational intervention should target the main problems, including misperception regarding ACS symptoms, identification of risk factors affecting pre-hospital delay, and providing information on what should be done when suffering ACS symptoms. Several studies have demonstrated the effectiveness in reducing pre-hospital delay after community health education through mass media campaigns,[42] public campaign,[43] and combined educational programs targeting the general public, general practitioners, and medical and paramedical hospital staff.[44] Local cultural factors should be considered in community health education because cultural factors have been reported to contribute to pre-hospital delay.[14]

There were several limitations in our study. Firstly, several factors were not included in the study, such as the referral mechanism, the perceptions of the patients concerning transportation, the distance between their home and the referral hospitals or health facilities, and the cultural mechanisms in effort to prevent ACS based on the lifestyles and symptoms of ACS were not taken into consideration. Secondly, we could not fully adapt the questionnaire used in previous studies because of cultural differences. Thirdly, because of small sample size, the analysis might have led to false positive findings.

In conclusion, our study findings reveal that female gender, low occupational level, lower monthly income, low educational levels, BPJS health insurance, private transportation, and taking a rest when suffering chest pain are associated with an increased risk for pre-hospital delay in patients with ACS in our hospital. Of these factors, taking a rest when suffering chest pain was the most significant risk factor for pre-hospital delay. Our results may provide the reference point to help the health professionals and medical care providers to develop a strategy to reduce pre-hospital delay in patients with ACS.

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ΣΚΟΠΟΣ Η αξιολόγηση των παραγόντων που σχετίζονται με την προνοσοκομειακή καθυστέρηση σε ασθενείς με οξύ στεφανιαίο σύνδρομο (ΟΣΣ). **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Διεξήχθη μια διασταυρούμενη έρευνα στο νοσοκομείο Sanglah κατά την περίοδο από τον Δεκέμβριο του 2017 μέχρι τον Μάιο του 2018. Για τη συλλογή των δεδομένων σχετικά με τους παράγοντες που σχετίζονται με την προνοσοκομειακή καθυστέρηση στους ασθενείς με ΟΣΣ, πραγματοποιήθηκαν συνεντεύξεις με επικυρωμένα ερωτηματολόγια. **ΑΠΟΤΕΛΕΣΜΑΤΑ** Κατά τη διάρκεια αυτής της περιόδου συμμετείχαν στη μελέτη 230 άτομα με προνοσοκομειακή καθυστέρηση και 62 χωρίς καθυστέρηση. Τα αποτελέσματα έδειξαν ότι ο αυξημένος κίνδυνος προνοσοκομειακής καθυστέρησης σε ασθενείς με ΟΣΣ στο νοσοκομείο μας επηρεάστηκε από διάφορους παράγοντες, όπως το γυναικείο φύλο, η ασχολία, το χαμηλό μηνιαίο εισόδημα, το χαμηλό επίπεδο εκπαίδευσης, η ασφάλιση υγείας, το ιδιωτικό μέσο μετακίνησης, και η αναμονή ενώ εμφανιζόταν θωρακικός πόνος. Επί πλέον, ο πλέον σημαντικός παράγοντας κινδύνου για την προνοσοκομειακή καθυστέρηση ήταν όταν οι ασθενείς εφησύχαζαν, ενώ υπέφεραν από θωρακικό πόνο. **ΣΥΜΠΕΡΑΣΜΑΤΑ** Η εφησύχαση όταν εμφανίζεται θωρακικός πόνος συνιστά τον κύριο παράγοντα που σχετίζεται με την προνοσοκομειακή καθυστέρηση σε ασθενείς με ΟΣΣ.

Λέξεις ευρετηρίου: Εκπαίδευση, Οξύ στεφανιαίο σύνδρομο, Προνοσοκομειακή καθυστέρηση

References

1. O'GARA PT, KUSHNER FG, ASCHEIM DD, CASEY DE Jr, CHUNG MK, DE LEMOS JA ET AL. 2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation* 2013, 127:e362–e425
2. AMSTERDAM EA, WENGER NK, BRINDIS RG, CASEY DE Jr, GANIATS TG, HOLMES DR Jr ET AL. 2014 AHA/ACC guideline for the management of patients with non-ST-elevation acute coronary syndromes: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2014, 64:e139–e228
3. SANCHIS-GOMAR F, PEREZ-QUILIS C, LEISCHIK R, LUCIA A. Epidemiology of coronary heart disease and acute coronary syndrome. *Ann Transl Med* 2016, 4:256
4. SABERI F, ADIB-HAJBAGHERY M, ZOHREHEA J. Predictors of prehospital delay in patients with acute myocardial infarction in Kashan city. *Nurs Midwifery Stud* 2014, 3:e24238
5. NISHIZAKI Y, MIYAUCHI K, OKAZAKI S, TAMURA H, OKAI I, OGITA M ET AL. Cause of death in patients with acute coronary syndrome. *J General Family Medicine* 2016, 17:332–335
6. FAJAR JK, HERIANSYAH T, ROHMAN MS. The predictors of no reflow phenomenon after percutaneous coronary intervention in patients with ST elevation myocardial infarction: A meta-analysis. *Indian Heart J* 2018, 70(Suppl 3):S406–S418
7. ROHMAN MS, FAJAR JK, KUNCAHYO BH, YUNITA L, SIDARTA EP, SAKA PNB ET AL. Angiotensin-converting enzyme (ACE) I/D and bradykinin B2 receptor T/C genes polymorphism in patients with ACE inhibitors-related cough. *Egypt J Med Hum Gen* 2018, 19:307–313
8. ROSAMOND W, FLEGAL K, FURIE K, GO A, GREENLUND K, HAASE N ET AL. Heart disease and stroke statistics – 2008 update: A report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation* 2008, 117:e25–e146
9. GAROFALO D, GREY C, LEE M, EXETER D, KERR AJ. Pre-hospital delay in acute coronary syndromes: PREDICT CVD-18. *N Z Med J* 2012, 125:12–22
10. LØVLIEN M, SCHEI B, HOLE T. Myocardial infarction: Psychosocial aspects, gender differences and impact on pre-hospital delay. *J Adv Nurs* 2008, 63:148–154
11. OTTESEN MM, DIXEN U, TORP-PEDERSEN C, KØBER L. Prehospital delay in acute coronary syndrome – an analysis of the components of delay. *Int J Cardiol* 2004, 96:97–103
12. PERKINS-PORRAS L, WHITEHEAD DL, STRIKE PC, STEPTOE A. Prehospital delay in patients with acute coronary syndrome: Fac-

tors associated with patient decision time and home-to-hospital delay. *Eur J Cardiovasc Nurs* 2009, 8:26–33
13. YOUSSEF GS, KASSEM HH, AMEEN OA, AL TAABAN HS, RIZK HH. Pre-hospital and hospital delay in patients with non-ST elevation acute coronary syndromes in tertiary care. *Egyptian Heart J* 2017, 69:177–181
14. ALSHAHRANI H, McCONKEY R, WILSON J, YOUSSEF M, FITZSIMONS D. Female gender doubles pre-hospital delay times for patients experiencing ST segment elevation myocardial infarction in Saudi Arabia. *Eur J Cardiovasc Nurs* 2014, 13:399–407
15. AMMANN P, PFISTERER M, FEHR T, RICKLI H. Raised cardiac troponins. *Br Med J* 2004, 328:1028–1029
16. CRONBACH LJ. Coefficient alpha and the internal structure of tests. *Psychometrika* 1951, 16:297–334
17. IACOBUCCI D, DUHACHEK A. Advancing alpha: Measuring reliability with confidence. *J Consum Psychol* 2003, 13:478–487
18. YAP BW, SIM CH. Comparisons of various types of normality tests. *J Stat Comput Sim* 2011, 81:2141–2155
19. RICKHAM PP. Human experimentation. Code of Ethics of the World Medical Association. Declaration of Helsinki. *Br Med J* 1964, 2:177
20. NOUREDDINE S, AREVIAN M, ADRA M, PUZANTIAN H. Response to signs and symptoms of acute coronary syndrome: Differences between Lebanese men and women. *Am J Crit Care* 2008, 17:26–35
21. CHIEFFO A, BUCHANAN GL, MAURI F, MEHILLI J, VAQUERIZO B, MOYNAGH A ET AL. ACS and STEMI treatment: Gender-related issues. *EuroIntervention* 2012, 8(Suppl P):P27–P35
22. ALLANA S, KHOWAJA K, ALI TS, MOSER DK, KHAN AH. Gender differences in factors associated with prehospital delay among acute coronary syndrome patients in Pakistan. *J Transcult Nurs* 2015, 26:480–490
23. LAM Y, BROADDUS ET, SURKAN PJ. Literacy and healthcare-seeking among women with low educational attainment: Analysis of cross-sectional data from the 2011 Nepal Demographic and Health Survey. *Int J Equity Health* 2013, 12:95
24. ASFAW LS, AYANTO SY, AWEKE YH. Health-seeking behavior and associated factors among community in Southern Ethiopia: Community based cross-sectional study guided by Health belief model. *Biorxiv* 2018, doi: https://doi.org/10.1101/388769
25. CLARK AE, OSWALD AJ. Satisfaction and comparison income. *J Public Econ* 1996, 61:359–381
26. ARNO PS, SOHLER N, VIOLA D, SCHECHTER C. Bringing health and social policy together: The case of the earned income tax credit. *J Public Health Policy* 2009, 30:198–207
27. BRYANT P. Self-regulation and moral awareness among entrepreneurs. *J Bus Venturing* 2009, 24:505–518
28. CRAWSHAW P. Critical perspectives on the health of men: Lessons from medical sociology. *Crit Public Health* 2009, 19:279–285
29. WEIDNER G, SIEVERDING M, CHESNEY MA. The role of self-regulation in health and illness. *Psychol Health Med* 2016, 21:135–137
30. OKTAVIONO YH, TAMBUNAN DB. The effect of Hospital X's participation in BPJS program on its service quality and financial performance. *The Fifth International Conference on Entrepreneurship* 2018, 3:42–52
31. DJAMHURI A, AMIRYA M. Indonesian hospital under "BPJS" scheme: A war in a narrower battlefield. *J Akuntasi Multiparadigma* 2015, 6:341–511
32. UNTARI ZIW, NURHAENI IDA. Managerial accountability in health right fulfillments of the physical disabilities. *Int J Administrative Science Organization* 2017, 24:145–151
33. ESKAWATI MY, MURTI B, TAMTOMO D. Implementation of the referral system policy in the national health insurance scheme at community health centers, Ngawi District, East Java. *J Health Policy Management* 2017, 2:102–111
34. DHARMA S, SISWANTO BB, FIRDAUS I, DAKOTA I, ANDRIANTORO H, WARDEH AJ ET AL. Temporal trends of system of care for STEMI: Insights from the Jakarta Cardiovascular Care Unit Network System. *PLoS One* 2014, 9:e86665
35. PITSAVOS C, KOURLABA G, PANAGIOTAKOS DB, STEFANADIS C; GREECS STUDY INVESTIGATORS. Factors associated with delay in seeking health care for hospitalized patients with acute coronary syndromes: The GREECS study. *Hellenic J Cardiol* 2006, 47:329–336
36. BANKS AD, DRACUP K. Factors associated with prolonged prehospital delay of African Americans with acute myocardial infarction. *Am J Crit Care* 2006, 15:149–157
37. FARSHIDI H, RAHIMI S, ABDI A, SALEHI S, MADANI A. Factors associated with pre-hospital delay in patients with acute myocardial infarction. *Iran Red Crescent Med J* 2013, 15:312–316
38. BENNADI D. Self-medication: A current challenge. *J Basic Clin Pharm* 2013, 5:19–23
39. FATHI M, RAHIMINIYA A, ZARE MA, TAVAKOLI N. Risk factors of delayed pre-hospital treatment seeking in patients with acute coronary syndrome: A prospective study. *Turk J Emerg Med* 2015, 15:163–167
40. XIE L, HUANG SF, HU YZ. Factors influencing pre-hospital patient delay in patients with acute myocardial infarction. *Chin Nurs Res* 2015, 2:75–79
41. MUSSI FC, MENDES AS, QUEIROZ TL, COSTA AL, PEREIRA Á, CARAMELLI B. Pre-hospital delay in acute myocardial infarction: Judgement of symptoms and resistance to pain. *Rev Assoc Med Bras (1992)* 2014, 60:63–69
42. MOONEY M, McKEE G, FEALY G, O'BRIEN F, O'DONNELL S, MOSER D. A review of interventions aimed at reducing pre-hospital delay time in acute coronary syndrome: What has worked and why? *Eur J Cardiovasc Nurs* 2012, 11:445–453
43. GASPOZ JM, UNGER PF, URBAN P, CHEVROLET JC, RUTISHAUSER W, LOVIS C ET AL. Impact of a public campaign on pre-hospital delay in patients reporting chest pain. *Heart* 1996, 76:150–155
44. BOUCKAERT M, LEMMENS R, THIJS V. Reducing prehospital delay in acute stroke. *Nat Rev Neurol* 2009, 5:477–483

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