

EVALUATION OF THE AWARENESS AND KNOWLEDGE OF PRE-HOSPITAL EMERGENCY CARE PROVIDERS ABOUT THE ACUTE STROKE AND TRANSFER OF PATIENTS TO REFERRAL CENTER FOR STROKE

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ABSTRACT

The current study aimed at determining the knowledge level of Pre-hospital emergency care providers about the symptoms of acute stroke and transfer of patients to Ahvaz Golestan Hospital, as a referral center for stroke in Southwest Iran. The current descriptive-analytical study was performed on 144 Pre-hospital emergency care providers of Ahvaz selected using convenience random sampling from April 2018 to March 2019. Required information was collected by a 17-item researcher-made questionnaire. According to the mean score of each domain, the highest and lowest knowledge levels of the participants were in facilities required for the timely transfer of patients with stroke and stroke certified centers, respectively. Also, the overall knowledge of Pre-hospital emergency care providers was at desirable level (mean±SD= 68.35±13.38). The knowledge level of Pre-hospital emergency care providers in the five studied domains was above 65% (mean±SD= 68.35±13.38). Therefore, it is recommended to promote the quality of Pre-hospital emergency care via applying of appropriate training programs and benefiting from trained mentors to modify incorrect methods and improve the quality of Pre-hospital emergency services by performing demonstrations and practical exercise.

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INTRODUCTION

Stroke is one of the leading causes of death worldwide. The World Health Organization defines stroke as a rapidly developing clinical signs and symptomatic focal disturbance of cerebral function lasting 24 hours or longer or leading to death with no other apparent cause (1). Stroke is the third leading cause of death worldwide (2), the second leading cause of death in the United States, and the most common neurological disorder in terms of pathogenesis (3). Although there are no accurate statistics on the incidence of stroke in Iran, according to reports, its prevalence varies from 23 to 149 per 100,000 people (4-7).

Stroke outcomes waste resources and impose huge costs on health system in the long run (8). Fortunately, rapid diagnosis and timely initiation of remedies can significantly reduce the outcomes and burden of the disease on both the patient and the health system (9).

The Pre-hospital emergency medical service is the first treatment team that provides care for patients; timely and appropriate Pre-hospital emergency care plays a pivotal role in reducing the stroke outcomes (10). Pre-hospital emergency care is a vital component of the emergency medical services system. It is in fact a community-based system that meets in-site therapeutic requirements of the injured and patients with acute and emergency illnesses until being transferred to a medical center (11).

Today, delay in the initiation of treatment, lack of a proper referral system, and lack of knowledge of emergency medical care providers about the possibility of stroke recovery in case of rapid transport of patients are the most important factors raised regarding stroke in the developing countries. According to evidence, by raising the knowledge level of Pre-hospital emergency care providers, the barriers to timely treatment and appropriate transport of patients with stroke

eliminate (12). Rapid diagnosis of stroke and appropriate transport of patients to medical centers are among the major tasks of Pre-hospital emergency care providers in case of stroke (13).

Given the importance of rapid diagnosis and appropriate transport of patients with stroke to medical centers as well as role accuracy of Pre-hospital emergency care providers as the first diagnostic and therapeutic team that provides care to patients, the present study aimed at determining the knowledge level of Pre-hospital emergency care providers about the symptoms of acute stroke and transport of patients to Acute Stroke Referral Center at Golestan Hospital, Ahvaz, Southwestern Iran.

MATERIALS AND METHODS

The present cross sectional, descriptive-analytical study was conducted from April 2018 to March 2019. Inclusion criterion was: working as Pre-hospital emergency care provider of Ahvaz who interested to participate in the study. Exclusion criteria were: unwillingness to participate in the study and providing incomplete information in the questionnaire. The sample size was 144 using the Morgan table. All the study participants were male due to Iranian rules and regulations for emergency care workers. Samples were selected by simple random sampling. The study protocol was approved by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences. In accordance with the Declaration of Helsinki, all the subject provided voluntary informed consent to participate in the study.

Required data were collected using a researcher-made questionnaire. The 17-item questionnaire included demographic variables such as age, level of education, type of employment, work experience, field of study, marital status, and type of the Pre-hospital emergency service station, as well as main variables such as five domains as essential measures in case of suspected stroke, golden time for the diagnosis and transfer of

patients with stroke, stroke certified centers, stroke codes, and identification of facilities required for timely transfer of patients with suspected stroke, which were scored based on a three-option scale as somehow executed = 3, completely executed = 2, and never executed = 1. Related textbooks as well as AHA guidelines were employed to develop the questionnaire. However, its validity was confirmed by the project supervisor and faculty experts, and Cronbach's alpha coefficient was also used to confirm its reliability ($\alpha=0.84$) by analyzing 50 complete questionnaires over a two-week interval indicating its high reliability.

Statistical analysis: Data were analyzed with SPSS version 21 using descriptive statistics (frequency distribution, frequency percentage, and/or standard deviation); ANOVA or t-test was employed to compare the means across the groups.

Results: A total of 144 participants were included in the study; since all the Pre-hospital emergency care providers are male in Iran, all the subjects in the current study were male. The mean age of participants was 44 ± 5.8 years; majority of them (48.0%) had high school diploma and 53.0% were graduated from an emergency medical technician program. Table 1 shows the participants' demographic characteristics.

According to the results of the study, the subjects highest level of knowledge was in facilities required for the timely transfer of patients with suspected stroke (3.91) followed by the golden time for the diagnosis and transfer of such patients, stroke codes, the essential measures that should be taken in case of a suspicious stroke, and stroke certified centers (Table 2). Fortunately, the knowledge level of the studied subjects was desirable in all the studied domains, except for stroke certified centers (Table 3). Also, the overall knowledge of Pre-hospital emergency care providers was at desirable level (mean \pm SD = 68.35 ± 13.38). According to the findings of the present study, there was no significant relationship

between the overall knowledge of Pre-hospital emergency care providers, and age, level of education, type of employment, field of study, and marital status ($P > 0.05$); but a significant relationship was found between their overall knowledge, and work experience and type of the Pre-hospital emergency service station ($P < 0.05$) (Table 4).

DISCUSSION

Stroke is a leading cause of death and disability worldwide. Most affected patients after the acute phase of the disease suffer from severe neurological deficits, so that approximately 70% of them never back to work and approximately 30% need some assistance with walking. In the present study, the subjects' highest level of knowledge in the essential measures that should be taken in case of a suspicious stroke was blood sugar test, with a mean of 3.83. The subjects' highest level of knowledge in the golden time for the diagnosis and transfer of patient with stroke, with a mean of 3.86, was related to periodic and continuous training of the Pre-hospital emergency care providers in the identification of stroke within the first minutes of symptoms onset.

The subjects' highest level of knowledge in the stroke certified centers, with a mean of 3.80, was related to the possibility of blood sampling by Pre-hospital care providers. The subjects' highest level of knowledge in stroke codes, with a mean of 4.04, was related to the transfer of patients with suspected stroke to medical centers in less than three hours. The highest knowledge level of the studied subjects in the identification of facilities required for timely transfer of patients with stroke, with a mean of 4.01, belonged to examining seizure symptoms in all suspected stroke cases.

The subjects' overall knowledge was at the desirable level (mean \pm SD= 68.35 ± 13.38). In the study by Aghababaeian (2017) in Khuzestan Province, Southwest of Iran, the findings showed that both the mean knowledge about triage and the

performance of the studied subjects were at moderate level (mean score: 9.44 and 9.58, respectively); however, their results were inconsistent with those of the current study given that the highest knowledge level of Pre-hospital emergency care providers in stroke codes, with the mean of 4.04, was related to the transfer of suspected stroke patients to medical centers within less than three hours (14), while in the present study, for various reasons such as proper training, higher levels of personnel information, etc., the subjects knowledge about triage was high and desirable.

In a study by Haghghi et al., (15) in Ahvaz, Iran, the level of nurses' knowledge about different triage areas was at a low level. Also, there was a significant difference between work experience and knowledge of nurses about triage ($p = 0.046$). The results of the initial phase of their study were not in line with those of the present study, but there was a significant relationship in both studies between work experience and knowledge level of the subjects.

In a study conducted in Farshchian Hospital in Hamadan, Iran, Ghiasian et al., (16) reported a high mean score for the transport time of patients with stroke and indicated long distance to a specialized medical center, incomplete knowledge about symptoms of stroke, lack of direct referral to the specialized medical centers, and absence of a human witness at the time of stroke symptoms onset as some factors contributing to the delay in hospital arrival of patients with stroke, which were inconsistent to the findings of the current study, since the results of the present study indicated that the highest knowledge level of emergency care providers in the golden time for diagnosis and transfer of patients with stroke, with a mean score of 3.86, belonged to periodic and continuous training of Pre-hospital emergency care providers in the identification of stroke within the first minutes after the onset of symptoms; the difference between the results of studies might be

attributed to the lack of essential and proper training in this area.

The results of the current study were in line with those of the studies by Heidari (17) and Yang (18). In an intervention study by Shirou et al., (2017) in Dubai, the UAE, the results showed that most participants could not correctly identify acute stroke and only 6.6% diagnosed it correctly. They showed that basic knowledge level in most aspects of diagnosis and management of acute stroke was low and educational lecture could increase the knowledge of Pre-hospital emergency staff (19), which was inconsistent with the results of the present study. The Pre-hospital emergency care providers of Ahvaz receive good trainings in stroke and the mean knowledge level of the studies subjects was also at a desirable level.

According to the obtained results, the overall knowledge level of Pre-hospital emergency care providers was above 57% (mean \pm SD = 68.35 ± 13.38) the five studied domains. The limitations of the present study were the use of a researcher-made questionnaire as the only data collection instrument for the evaluation of the level of knowledge in Pre-hospital emergency care providers. It is recommended to modify inappropriate methods by applying proper training methods and benefitting from trained mentors, and promote and maintain the quality of Pre-hospital emergency services by performing demonstrations and practical exercise.

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Table 1: The participants' demographic characteristics

Variables	frequency	percent
Age range		
30-40	33	23.0
41-50	80	55.5
51-60	31	21.5
Education level		
Diploma	69	48.0
Associate	55	38.0
Bachelor	14	10.0
Master	6	4.0
Marital status		
single	35	24.0
married	109	76.0
Employment status		
permanent	42	29.16
temporary-to permanent	25	17.36
contractual	32	22.22
compulsory medical service program	45	31.25
work experience		
5 years<	26	18.05
5-10 years	75	52.08
>10 years	43	29.86
Major		
medical emergency technician	76	53.0
Nursing	68	47.0
Pre-hospital Emergency Base Type		
Urban	90	62.5
Road	54	37.5

Table 2: The mean rating of pre-hospital emergency personnel knowledge about symptoms of acute stroke and referral of patients

Awareness aspects of pre-hospital emergency personnel	Mean
Actions needed in case of doubt	3.64
Golden time for diagnosis and transmission	3.72
Medical centers intended for admission	3.48
Codes intended for referring	3.64
Identify the facilities needed to transfer without wasting time	3.91