







# FACTORS AFFECTING FALSE CALLS TO PREHOSPITAL EMERGENCY MEDICAL SERVICES AND ANALYZING THE RECORDED FALSE CALLS IN THE DISPATCH CENTER

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## Abstract

**INTRODUCTION:** False calls to the prehospital emergency medical service (EMS) can divert EMS concentration from people with life-threatening conditions to a false situation and also affect the lives of the at-risk people.

**MATERIAL AND METHODS:** This cross-sectional study, was conducted in 2019. The population consisted of 28 Dispatchers personnel and 130 emergency medical technicians located in 24 urban bases, and the recorded messages of 450 false calls to the prehospital EMS were also analyzed. Both personnel perspectives on the false calls questionnaire and false call content evaluation checklist were used to collect data.

**RESULTS:** The most influential factors in the incidence of false calls were the dimensions of public education ( $4.38 \pm 0.5$ ) and instructions and guidelines ( $4.28 \pm 0.51$ ), respectively. "Insufficient knowledge of people about the sensitivity of EMS work" from the public education dimension ( $4.60 \pm 0.54$ ) and "Lack of codified rules for dealing with false calls to the EMS" from the instructions and guidelines dimension ( $4.48 \pm 0.71$ ) were the most important factors. type of requests from EMS were mostly unnecessary conversations (52.4%) and dispatching an ambulance (21.3%).

**CONCLUSIONS:** Given the importance of emergency, it is required to promote the general public knowledge and culture, as well as stricter rules and training programs for all ages, should be considered to reduce false calls. On the other hand, prehospital emergency medical dispatcher personnel should be trained on how to deal with false calls.

**KEY WORDS:** false calls; false emergency calls; EMS, prehospital emergency personnel

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## INTRODUCTION

In health care systems, patients with critical and emergency conditions generally deal first with the prehospital emergency, so the most important ele-

ment of medical care is emergency care, particularly prehospital emergency [1]. Prehospital care begins at the patient's bedside and ends in the hospital emergency room. However, some studies have re-

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ported these services until the patient is discharged from the hospital [2]. The more accurately, precisely, and quickly the care of these patients is provided by the Emergency Medical Services (EMS), the lower mortality and morbidity due to diseases, and the greater citizens' trust in this system [3].

The results of the research suggest that emergency response time and no delay in presence at the scene of the accident are important indicators in evaluating the performance of the prehospital emergency [4], and an initial presence of less than 8 min is required to save the patient (this time is taken from the person's first contact with the emergency operator). The Emergency Center 115 is responsible for this important task in Iran [5].

Out-of-hospital emergency care is a very dynamic and complex task. Employees who work in this department encounter time constraints and patients with acute conditions who are potentially exposed to unpredictable changes [6]. The necessary arrangements by the emergency medical dispatchers should be made for the rescue and dispatch of ambulances in order to ensure the provision of prompt and safe emergency care [7]. Emergency medical dispatchers are the first point of contact for people in need of emergency medical services and play a crucial and vital role in the prehospital emergency system. In fact, emergency medical dispatchers are the vital link between people in need of emergency care and the resources available to provide emergency medical services [8].

It is important to direct ambulances in emergency cases to patients who urgently need help or are rushed to the hospital. Due to limited facilities, the emergency medical dispatchers cannot dispatch an ambulance for all emergency calls; allocating resources and dispatching ambulances in a timely and correct manner can therefore play a key role in system efficiency [9]. Studies reported that several factors are involved in the speed and missions of personnel working in the emergency 115, which can include road breakdowns, road congestion, adverse weather and climate, long distances, a dispatch from other bases due to insufficient ambulances at the regional base, reception of the wrong address by the operator, no dispatch of an ambulance, delayed the dispatch of the ambulance and delayed the start of the mission by the technician. Among these, the highest percentage is related to dispatching ambulances from another base to an area of the city due to the lack of ambulances in

the area, for which the existence of false calls and false missions is one of the most important reasons for this event [10].

According to Moradian et al., false calls increase the response time to emergency calls in Iran [1]. The dispatch of an ambulance to a false mission due to false emergency calling is one of the reasons for lacking the ambulance at the emergency base. All emergency services can be affected by false emergency calls [11]. False emergency calls divert emergency services from people in life-threatening conditions to false ones and can affect the life and death of at-risk people [12]. Given the importance of this issue, during the statistics obtained by the researcher from Tabriz Emergency Medical Center regarding the number of missions in the first six months of 2018, it was found that 55,700 calls out of 151,000 calls with the Emergency Medical Dispatchers resulted in receiving a mission and dispatching an ambulance, of which 27,800 cases were false missions that were not observed any cases after the ambulance arrived at the scene [1, 11]. Waseem et al. (2010) [13], during their six-year study from 2004 to 2010 on emergency calls, stated that 97.85% of emergency calls were, in fact, non-emergency calls. In their study, they categorized non-emergency calls into four categories: (1) Calls received for jokes and harassment purposes (91.5%), (2) Calls for information on employment and other issues (7.27%), (3) Misdialing (1.05%), and (4) Calls in which the person falsely indicates his/her emergency status (0.14%). Živanović et al. (2009) [15] also analyzed a total of 739,742 calls, of which 12.625% were false emergency calls and 10.775% were false dialing.

Improper emergency calls are a costly problem for the country's healthcare system because emergency services must multiply their resources to ensure that their services are responsive to actual calls, and the system may not be able to provide the required resources and respond to real emergencies due to limited resources and budget [15]. These disturbances can also increase fatigue and reduce personnel accuracy. Such issues may, in some cases, lead to irreparable harm to patients [14].

Therefore, it is required to take the necessary measures to reduce false calls. The first step in solving any problem is to discover and root out the causes. Accordingly, it was decided to identify the factors affecting the false calls based on the per-

sonnel perspective and analysis of the characteristics of the calls to the prehospital Emergency of Tabriz in this study. It is hoped that healthcare managers and providers at the level of EMS and prehospital use the results of this study and take fundamental steps to educate and improve the attitude and practice of people who attempt to conduct false calls and create false missions.

## MATERIAL AND METHODS

This research is a descriptive cross-sectional study that was conducted at Tabriz University of Medical Sciences in 2019. The research units in this study consisted of personnel of the Emergency Service, the Emergency Medical Dispatcher personnel, and recorded calls as false calls. Inclusion criteria were having at least six months of work experience in the Emergency Medical Dispatchers, having at least an Associate degree in one of the paramedical disciplines — e.g., Emergency medicine, Nursing, Midwifery, Anesthesia, and Perioperative nursing — and recorded voices as false calls and exclusion criteria were incomplete completion of questionnaires and unwillingness to participate in the study.

Due to the limited number of personnel working in the Emergency Service 115 of Tabriz, all individuals, including 28 personnel of the Emergency Medical Dispatchers and 130 emergency medical technicians located in 24 urban bases, were included in the study. Cochran's formula was used to determine the number of calls required for analysis. According to the statistics available from the Emergency Service, which showed that the number of calls made to this center during the first six months of 2018 was equal to 151,000 calls, of which 55,700 led to the mission and dispatch of an ambulance, and among them, there were 27,800 false missions,  $p$  was equal to 49.9% and  $q$  was equal to 59.1%, determining the sample size of 400 items with  $d = 0.05$ , but about 450 cases of false calls were analyzed.

$$n = \frac{z^2 pq}{d^2} \quad (1)$$

To determine the characteristics of false calls, the researcher, in coordination with the Emergency Service 115, analyzed the recorded calls during previous work shifts, and this analysis continued until the completion of 450 checklists.

The data collection tool in this study was a three-part questionnaire as follows:

### Demographic data

This section included data on age, gender, marital status, level of education, occupation, work experience, and type of employment.

### Personnel perspective

A literature review and analysis of available sources [5, 15–17], as well as the comments of 3 experts and five personnel working in the prehospital EMS, were used for the initial design of this questionnaire. The questionnaire included the dimensions of public education, instructions, and guidelines, social factors, telecommunications infrastructure, and manpower, each of which included 7, 5, 8, 7, and 6 items, respectively. Responding to the items of the questionnaire in the form of a 5-point Likert score was strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1), indicating the degree of agreement of the respondent (the Emergency Medical Dispatchers 115 operators and technicians) with the factor mentioned in the item to cause the possibility of false calls to the Emergency Medical Dispatchers 115. A higher score in each item and dimension indicates the greater impact of that factor in causing false calls, and thus, one percent and frequency were reported for each factor to measure the factors affecting false calls to the Emergency Medical Dispatchers 115.

Before data collection, according to the proposed methods of Lawshe (for content validity ratio) and Waltz & Bausell (for content validity index), the validity of the personnel perspective questionnaire through the face and content validity of the questionnaire was reviewed and approved based on the judgment of a panel of experts including eight prehospital emergency professors, four professors of Tabriz School of Nursing and Midwifery with experience in prehospital emergency, and three prehospital emergency personnel with rich experience in the field of emergency care [5]. The reliability of the questionnaire was assessed through internal consistency reliability by Cronbach's alpha coefficient, which was between 0.88 and 0.92 for the total dimensions of the questionnaire.

### Checklist for analyzing calls made to the Emergency Medical Dispatchers 115

The checklist items were first extracted based on a literature review [18–20] and interviews with five prehospital EMS personnel regarding the characteristics of false calls to the Emergency Medical

Dispatchers. These items include parts such as the time of the call, the type of caller operator, the number of calls from one phone number, the duration of the call, the caller's gender, the call reason, the operator's response to the call, and finally the actions taken against the calls. The frequency was determined as a percentage for each section after completing the checklist and analyzing the recorded calls.

To determine the checklist validity before data collection, checklist validity was analyzed and approved based on face and content validity according to the proposed methods of Lawshe (for content validity ratio) and Waltz & Bausell (for content validity index) on the basis of the judgment of a panel of experts including eight prehospital emergency professors, four professors of Tabriz School of Nursing and Midwifery with experience in prehospital emergency, and three prehospital emergency personnel with rich experience in the field of emergency care [5]. Reliability among observers was used to determine its reliability so that ten calls recorded in the Emergency Medical Dispatchers were listened to by two people independently, and the checklist was completed by both for each call. The data of these two people were entered into SPSS software, and the intraclass correlation coefficients were calculated, which was 0.96 between the two observers indicating the reliability of the tool's stability.

The researcher studied the samples after receiving permission from the ethics committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1397.406) and informed consent from the subjects. Employees were asked to complete a designed questionnaire regarding the underlying causes of false calls to collect the data. The emergency technicians and the staff of the Emergency Medical Dispatchers were invited to cooperate and participate in the study in the last hours of the shift in order to prevent the impact of the assigned tasks in the work shift on the response of the participants. The objectives of the study were then explained to them, and the final questionnaire was completed. A checklist related to the specifications of the calls made to the Emergency Medical Dispatchers 115 was also used to determine the characteristics of the calls made to the Emergency Medical Dispatchers, which was completed by the researcher during his visit to the Emergency Medical Dispatchers and the recorded calls were analyzed. The preparation of the checklist was also based on the comments of the personnel of the Emergency Medical Dispatchers 115. Finally,

**Table 1. Demographic data of Tabriz prehospital EMS staffs, 2019 (158 people)**

Variable		Frequency (%)
Gender	Female	38 (24.1)
	Male	120 (75.9)
Marital status	Single	53 (33.5)
	Married	105 (66.5)
Occupation	Emergency technician	130 (82.3)
	Dispatch operator	28 (17.7)
Level of Education	Below diploma	1 (0.63)
	Diploma	3 (1.9)
	Bachelor degree	137 (86.7)
	Master of science degree	17 (10.75)
Employment type	Official full-time	49 (31)
	Temporary-to-permanent	49 (31)
	Under-a-contract	25 (15.8)
	Contractual	10 (6.4)
	Conscription law's conscripts	25 (15.8)
Quantitative variables	Mean $\pm$ SD	
Age (year)	33.67 $\pm$ 6.82	
Work experience (year)	9.49 $\pm$ 5.94	

the results of data obtained from actual calls to the Emergency Medical Dispatchers were compared with the results of questionnaires completed by staff, and the main causes of false calls were identified.

The collected data after entering SPSS-14 software were statistically analyzed using descriptive statistics, and the frequency of effective causes was expressed in terms of rank and percentage.

## RESULTS

In this study, the majority of participants were male (75.9%), married (66.5%), with the occupation of emergency medical technician (82.3%), and with a bachelor's degree (86.7%). The demographic profile is totally presented in Table 1.

According to the participants, public education (4.38  $\pm$  0.50) and instructions and guidelines (4.28  $\pm$  0.51) were reported to be the most influential factors in false calls, respectively (Tab. 2).

In the public education dimension, the item "Insufficient knowledge of people about the sensitivity

**Table 2. Results related to the factors affecting false calls to the Emergency Medical Dispatchers from the perspective of Tabriz prehospital emergency staff in different dimensions in 2019**

Dimension	No.	Item	Item M $\pm$ SD	Dimension M $\pm$ SD
Public education	1	Insufficient knowledge of citizens on the sensitivity of the Emergency Service 115 work	4.60 $\pm$ 0.54	4.38 $\pm$ 0.50
	2	Insufficient knowledge of citizens on the existence of punishment for false calls to the Emergency Service 115	4.59 $\pm$ 0.67	
	3	Insufficient knowledge of citizens on the EMS, firefighting, and telephone breakdown phone numbers	3.97 $\pm$ 1	
	4	Insufficient knowledge of citizens on the field of the Emergency Service 115 task	4.44 $\pm$ 0.64	
	5	Insufficient public education through the media regarding the Emergency Service 115	4.53 $\pm$ 0.62	
	6	Not application of billboards and banners about the Emergency Service 115	4.30 $\pm$ 0.82	
	7	No training on the Emergency Service 115 at schools and universities	4.26 $\pm$ 0.82	
State directives & instructions	8	Lack of codified rules for dealing with false calls to the Emergency Service 115	4.48 $\pm$ 0.71	4.28 $\pm$ 0.51
	9	Lack of ministerial instructions on how to manage false calls	4.37 $\pm$ 0.81	
	10	Lack of memorandum between the Emergency Service 115 and telecommunications to block duplicate call numbers to the Emergency Service 115	4.39 $\pm$ 0.80	
	11	Existence of guidelines and algorithms for how citizens call in emergency situations with the Emergency Service 115	4.05 $\pm$ 0.96	
	12	Instructions on how to call	4.10 $\pm$ 0.75	
Social factors	13	False calls can be done mostly by unemployed people	4.20 $\pm$ 0.93	3.97 $\pm$ 0.59
	14	False calls can be done mostly by people with a low level of education	3.85 $\pm$ 1.07	
	15	False calls can be done mostly by males	3.66 $\pm$ 1.06	
	16	Increased tendency of males to false calls to the Emergency Medical Dispatchers due to more employment of women in such centers	3.80 $\pm$ 0.99	
	17	The effectiveness of the social class of individuals in making false calls to the Emergency Medical Dispatchers	4.18 $\pm$ 0.81	
	18	Having psychological problems in people can encourage them to make the false call to the Emergency Medical Dispatchers 115	4.15 $\pm$ 0.80	
	19	False calls as young people's entertainment and spending leisure time	3.95 $\pm$ 0.83	
	20	Possibility of using the SIM card without an identity	3.92 $\pm$ 0.98	
Telecommunication Infrastructure	21	Lack of development of telecommunication operator activities with no cultural context	4.02 $\pm$ 0.90	4.03 $\pm$ 0.477
	22	Lack of development of telecommunication operator activities without supervision and control over the legal use of the SIM card by the user	4.13 $\pm$ 0.82	
	23	Lack of development of telecommunication systems of the Emergency Medical Dispatchers	3.98 $\pm$ 0.83	
	24	Number of phone lines to avoid being busy	3.5 $\pm$ 1.25	
	25	Free call to the Emergency Service 115	4.15 $\pm$ 1.03	
	26	Free services by the Emergency Service 115	4.5 $\pm$ 0.80	
	27	Failure to follow the results of missions dispatched by the prehospital Emergency Service	3.79 $\pm$ 1.08	
Manpower	28	No training for the Emergency Medical Dispatchers 115 operator on how to answer phone calls and telephone triage	3.74 $\pm$ 1.03	3.76 $\pm$ 0.56
	29	Poor performance of the Emergency Medical Dispatchers 115 operator in the field of telephone history of the caller	3.80 $\pm$ 1.00	
	30	No experience of the Emergency Medical Dispatchers 115 operator in managing the calls with the Emergency Medical Dispatchers 115	3.71 $\pm$ 0.99	
	31	Increase of citizens' non-emergency demands from the Emergency Medical Dispatchers 115 team due to the slogans and propaganda speeches of the Emergency Medical Dispatchers 115 officials in the media and society	4.00 $\pm$ 0.91	
	32	How dealing dispatched technicians with a patient	3.59 $\pm$ 0.98	
	33	Coverage of emergency services for service recipients	3.68 $\pm$ 0.90	

**Table 3. Information of callers in false calls to Tabriz prehospital Emergency Medical Dispatchers in 2019 (n = 450)**

Variable		Frequency	Percentage
Gender	Male	302	67.1
	Female	148	32.9
Age	Children	66	14.4
	Adults	384	85.6
Working shift	Morning	123	27.3
	Evening	203	45.1
	Night	124	27.6
Operator kind	MCI	135	30.0
	Irancell	166	37.0
	Landline phone	78	17.3
	Public phone	71	15.7
Call time (3 h)	00:01–03:00	16	3.6
	03:01–06:00	8	1.8
	06:01–09:00	9	2.0
	09:01–12:00	58	12.9
	12:01–15:00	98	21.8
	15:01–18:00	101	22.4
	18:01–21:00	90	20.0
	21:01–00:00	70	15.6
Respondent Gender	Female	403	89.6
	Male	47	10.4

**Table 4. Call content analysis to Tabriz prehospital Emergency Medical Dispatchers in 2019 (n = 450)**

Variable		Frequency	Percentage
Request type	Ambulance dispatch	96	21.3
	Irrelevant talking	236	52.4
	Immorality	58	13.0
	Silence	60	13.3
Response type	Instant disconnect	105	23.3
	Speaking	219	48.7
	Explaining	59	13.1
	Advising	8	1.8
	Retaliating	9	2.0
	Threatening	48	10.7
	Invitation to relax	2	0.4
Operator reaction	Dispatching an ambulance	1	0.01
	Rejecting the request	449	99.99

**Table 5. Data on the duration (min) of responding false calls to Tabriz prehospital Emergency Medical Dispatchers in 2019**

No.	Min.	Max.	Total time spent responding to false calls	M ± SD duration
450	0.08	3.23	304.18	0.45 ± 0.35

of pre-hospital EMS work" ( $4.60 \pm 0.54$ ) has played the most important role from the participants' perspective in encouraging false calls to the Emergency Medical Dispatchers, while in the dimension of instructions and guidelines, the item "Lack of codified rules for dealing with false calls to the Emergency Service 115" ( $4.48 \pm 0.71$ ) had the largest impact on the occurrence of false calls from the participants' perspective.

In the dimension of telecommunications infrastructure, the item "Free Services of Emergency Service 115" ( $4.5 \pm 0.80$ ) had the greatest impact; in the dimension of social factors, the item "False calls can be occurred by the unemployed people" ( $4.20 \pm 0.93$ ) had the highest effect; and in the dimension of manpower, the item "Increase of non-emergency demands of the people from the Emergency Service 115 team due to the slogans and propaganda speeches of the Emergency Service 115 officials in the media and society" ( $4.00 \pm 0.91$ ) had the largest impact in participations' perspective (Tab. 2).

According to Table 3, the majority of false calls were made by men (67.1%) in evening shifts (35.1%) and through Irancell (37%). Complete data in this regard are shown in Table 3.

Analysis of the call contents to the prehospital Emergency Medical Dispatchers in Tabriz suggested that the type of requests was mostly irrelevant ( $n = 236$ , 52.4%) (Tab. 4).

The results for the time spent to respond to false calls in 450 cases in Table 5 show that a total of 204.18 min were spent by operators to respond to these false calls. The average response time to false calls was  $0.45 \pm 0.35$  min and the time spent was 0.08–3.23 min.

## DISCUSSION

As there are limited studies on false calls to the Emergency Services, and due to lack of evidence as to whether this is the only problem in developing countries, as well as since false calls to the Emergen-



cy Medical Dispatchers and the subsequent increase in the number of false missions is one of the major problems of the East Azarbaijan Medical Emergency and Accident Center, the results of this study aimed to determine the perspectives of prehospital Emergency Service personnel regarding factors affecting the prevalence of false calls in 5 areas of public education, instructions and guidelines, social factors, telecommunications infrastructure, and manpower from the perspective of prehospital Emergency Medical Dispatchers personnel, indicating that the most important factor in the prevalence of false calls is related to the area of "public knowledge". In this area, the most influential factor was insufficient knowledge of people on the sensitivity of the EMS work. According to participants, if people realized that any unnecessary calls were delaying emergency procedures for patients in need, they might not have done so. In this regard, about 40% to 50% of emergency calls in the United States and Canada, Switzerland, and the United Kingdom are unnecessary [21]. According to Navid Tahir (2016), 66 million false calls took place in Punjab from 2004 to 2015, with the main cause of the lack of public knowledge on emergency tasks [22]. The second main factor in this area was insufficient public knowledge on the existence of punishment for false calls. Insufficient public education through public media has also been identified as the third effective factor in this area. The results of a study by Kawakami et al. (2007) also showed that people who were unaware of EMS were more likely to call the Emergency Medical Dispatchers. Furthermore, three other factors such as age, living alone, and not having a vehicle were mentioned in this study as significant cases in making contact with the Emergency Medical Dispatchers [17]. However, most of the emergency calls have been considered unnecessary, and the reason for this is the lack of a vehicle to go to medical centers [8].

Therefore, insufficient knowledge is one of the factors increasing contact with EMS. Public education about EMS can reduce the number of calls. In Sao Paulo, Brazil, there was a high level of false calls to EMS, where a training program called "Friends of SAMU (Service d'Aide Médicale Urgente)" was conducted for students, resulting in a reduction in the number of calls to the Emergency Service by 46%. This training program conducted by nurses included training on how to dial emergency, firefighting, and police [23]. Excessive misuse of emergency numbers indicates that a lack of public knowledge

and a modest attitude can lead to death or irreparable consequences [24].

The second most effective area of false calls from the participants' perspective in this study is the factor of instructions and guidelines in dealing with false calls. In this area, the lack of codified rules for dealing with false calls, the lack of a contract between the telecommunications system and the Medical Emergency and Accident Center to block duplicate contact numbers, and the lack of guidelines and ministry rules for managing false calls are listed among the factors affecting false calls to EMS. According to the professional experiences of the study authors, although in recent years several intruders who disrupted the emergency system have been identified and arrested, and laws have been enacted to deal with them, such as imprisonment for six months or more, it is generally difficult to identify whether the caller is an intruder or not because if there is a suspicion of disturbing and not dispatching an ambulance, there is a possibility that people's lives will be endangered. Therefore, due to ethical issues, personnel dispatch ambulances in most cases but do not find the disease on the scene.

Studies have also shown that approximately 38–51% of emergency calls are not for medical purposes, and there is no way to determine if the calls are emergency or not [15]. In Australia, instructions were issued for dealing with false callers and emergency call management in 2008, announcing one year in prison and a fine [19].

The third factor affecting false calls from the participants' perspective is the available telecommunications infrastructure. Providing comprehensive and free services in the prehospital EMS can lead to the abuse of these conditions and false calls by some people. While the existence of this infrastructure is inevitable given the importance of these services in public health, it has also provided the ground for such abuses. SIM cards in Iran are also provided to people inexpensively and sometimes for free, which are used anonymously and with no registration in the telecommunication system. Since people who call the Emergency Medical Dispatchers often use this kind of SIM card, it is difficult for the Emergency Medical Dispatchers to identify the intruders. To that end, it is required for the telecommunication system to provide a way to prevent the misuse of these SIM cards.

Another factor affecting false calls to EMS is social factors. According to the personnel, false calls to EMS are mostly taken by people who are unemployed and

do not have a job. Moreover, the social class of the people plays an important role in false calls to EMS from the participants' perspective. Ultimately, people who make false calls to EMS suffer from psychological problems from the participants' perspective. Multiple studies show that the misuse of EMS is directly related to socioeconomic characteristics. Those with low incomes are more likely to call EMS. Age is also an influential factor in contact with EMS, and people over 60 are more likely to call EMS [17]. Shaw et al. (2006) suggested that the process of refusing to send patients to the hospital often involved medical, emotional, and social factors [18].

Finally, the last and least important factor in the prevalence of false calls from the perspective of participants was the manpower factor. According to the participants, the slogans of the officials and managers increased the demands of the people from EMS for everything. In their view, operators also perform poorly in obtaining a complete history of the caller and identifying a false calling from a non-false one. They can hardly distinguish between the two. The working conditions of EMS operators are complex, requiring flexibility, empathy, speed, and courage when making decisions [24]. Weibel et al. found high levels of cortisol among the Emergency Medical Dispatchers respondents and stated that planning is required to identify and minimize the stressful aspects of their work [25].

In this study, by analyzing 450 false calls made with the Tabriz Emergency Medical Dispatchers 115, it was found that the highest number of callers were male, among which the most calls were made in the evening shift. This is while no study has been conducted on this section of the research so far, and this finding is one of the unique findings of Iran. The calls made at night often lead to the dispatch of the patient to medical centers, among which the calls made from IranCell, MCI, landline, and public telephone operators are the communication means between the false callers and EMS, respectively, and cause harassment for the personnel of the Emergency Medical Dispatchers. Mobile phone use is increasing in all age, cultural and social groups [20]. Studies show that the majority of false calls occur from mobile phones [26]. The availability of unregistered or anonymous cell phones with the wrong residential address has made it more difficult to track false calls [27]. The calls made by the children seem to be due to the lack of attention of the parents, particularly the mothers, to the children, who have

sometimes called the Emergency Medical Dispatchers by holding their mobile phones.

In a study conducted in 2017, there was no disease at the scene in 88 (4.91%) cases out of 1791 calls to the Emergency Medical Dispatchers. However, false calls to the Emergency Medical Dispatchers in Western societies are minimal and may be due to the high public perception of important EMS activities [28].

The type of call made to the Emergency Medical Dispatchers has often been in the form of irrelevant conversations with ridiculous and lying themes, which such behaviors are sometimes a sign of personality disorder, and young people find this behavior as fun and entertainment [29].

On the other hand, the type of response of the operator and the manner of his/her behavior was talking and immediate disconnection; in this regard, the operators should emphasize the time management due to the nature of relief and saving patients' lives, and avoid marginalization in calls [30].

According to the results of the present study, approximately 204 min of the operators' time in the Emergency Medical Dispatchers was spent answering false calls, *i.e.*, for about 3.5 h, when the EMS 115 line could be open and accessible for people in need of emergency services, it spent to respond and manage false calls. According to a study by Blackstone (2007), in the United States, 33% of emergency calls were false, and only 25% of calls were emergency and required an ambulance. According to the study, most people called the Emergency Medical Dispatchers for an ambulance to dispatch their patient to the hospital [30].

According to the results of this study and considering the importance of EMS activities in saving patients' lives and accelerating service to the people, efforts should be made to inform the community about this important matter and increase the knowledge and culture level of the general public. Stricter rules and training programs for all ages should also be considered to reduce false calls. On the other hand, the personnel of the Emergency Medical Dispatchers should be trained on how to deal with false calls in order to reduce this problem by responding appropriately to them, as well as by recognizing the false calls more accurately; training can save the lives of these people and accelerate the dispatch of ambulances and provide better medical services to the injured and patients, and help in better management of human and financial resources.



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## Conflict of interest

The authors declare that they have no conflict of interest.

## REFERENCES

- Moradian M, Peyravai M, Ettehadi R, et al. Investigating the response time to emergency cases and the causes of delays in emergency services missions in Shiraz, Iran. *JORAR*. 2013; 5(2).
- Khoram Ni, Soltani S, Shirzad H. Ashore moghadam S, Naderi far M. Basic medical emergency prehospital, simin dokht. ; 2005: 3–11.
- Luiz Th. [Emergency medicine tomorrow]. *Anesthesiol Intensivmed Notfallmed Schmerzther*. 2003; 38(4): 296–302, indexed in Pubmed: [12728923](#).
- Pakhereh E, Rezaeirad M, Tahmasbi B, et al. Ranking the factors affecting readiness of prehospital emergency care according to the perspectives of staff in mazandaran prehospital emergency services. *J Mazandaran Univ Med Sci*. 2016; 25(134): 261–269.
- Rahmati F, Gholamalipoor H, Hashemi B, et al. The reasons of emergency department patients' dissatisfaction. *Iranian Journal of Emergency Medicine*. 2015; 2(2): 59–63.
- Catlett CL, Jenkins JL, Millin MG. Role of emergency medical services in disaster response: resource document for the National Association of EMS Physicians position statement. *Prehosp Emerg Care*. 2011; 15(3): 420–425, doi: [10.3109/10903127.2011.561401](#), indexed in Pubmed: [21480774](#).
- Cooney DR, Millin MG, Carter A, et al. Ambulance diversion and emergency department offload delay: resource document for the National Association of EMS Physicians position statement. *Prehosp Emerg Care*. 2011; 15(4): 555–561, doi: [10.3109/10903127.2011.608871](#), indexed in Pubmed: [21870947](#).
- Hjälte L, Suserud BO, Herlitz J, et al. Why are people without medical needs transported by ambulance? A study of indications for pre-hospital care. *Eur J Emerg Med*. 2007; 14(3): 151–156, doi: [10.1097/MEJ.0b013e3280146508](#), indexed in Pubmed: [17473609](#).
- Mortaro A, Pasco D, Zerman T, et al. The role of the emergency medical dispatch centre (EMDC) and prehospital emergency care safety: results from an incident report (IR) system. *CJEM*. 2015; 17(4): 411–419, doi: [10.1017/cem.2014.74](#).
- Sticchi L, Gasparini R, Durando P, et al. First aid healthcare interventions operations centres (118) in Italy. *JPMH*. 2004; 45: 27–30.
- Azemian A. The standards of professionalism in nursing: the nursing instructors' experiences. *Evidence Based Care*. 2014; 4(1): 27–40.
- Gardner GJ. The use and abuse of the emergency ambulance service: some of the factors affecting the decision whether to call an emergency ambulance. *Arch Emerg Med*. 1990; 7(2): 81–89, doi: [10.1136/emj.7.2.81](#), indexed in Pubmed: [2390158](#).
- Waseem H, Durrani M, Naseer R. Prank calls: A major burden for an emergency medical service. *Emergency Medicine Australasia*. 2010; 22(5): 480–480, doi: [10.1111/j.1742-6723.2010.01339.x](#).
- Zivanovic S. Misuse and abuse of 194 phone number at emergency medical services Belgrade. *ABC casopis urgentne medicine*. 2017; 17(2): 23–30, doi: [10.5937/abc1701023z](#).
- Palazzo FF, Warner OJ, Harron M, et al. Misuse of the London ambulance service: How much and why? *J Accid Emerg Med*. 1998; 15(6): 368–370, doi: [10.1136/emj.15.6.368](#), indexed in Pubmed: [9825272](#).
- Assar-roudi A. The causes of late arrival of pre-hospital emergency from the point of view of clinical emergency personnel of the 115 of Mashhad in 2006. *Dena Journal*. 2009; 3(3): 1–15.
- Kawakami C, Ohshige K, Kubota K, et al. Influence of socioeconomic factors on medically unnecessary ambulance calls. *BMC Health Serv Res*. 2007; 7: 120, doi: [10.1186/1472-6963-7-120](#), indexed in Pubmed: [17655772](#).
- Shaw D, Dyas JV, Middlemass Jo, et al. Are they really refusing to travel? A qualitative study of prehospital records. *BMC Emerg Med*. 2006; 6: 8, doi: [10.1186/1471-227X-6-8](#), indexed in Pubmed: [16984647](#).
- Rashford S, Isoardi K. Optimizing the appropriate use of the emergency call system, and dealing with hoax callers. *Emerg Med Australas*. 2010; 22(5): 366–367, doi: [10.1111/j.1742-6723.2010.01325.x](#), indexed in Pubmed: [21040478](#).
- Victor CR, Peacock JL, Chazot C, et al. Who calls 999 and why? A survey of the emergency workload of the London Ambulance Service. *J Accid Emerg Med*. 1999; 16(3): 174–178, doi: [10.1136/emj.16.3.174](#), indexed in Pubmed: [10353041](#).
- Zeraat A. Description of the Islamic Penal Code, Section of sanctions. 1 ed. Tehran: Ghogнус; 2009. [specify this reference please??]
- Tahir M, Akbar A, Kayani A, et al. Non emergency calls at an emergency setting: mass awareness needed. *Injury Prevention*. 2016; 22(Suppl 2): A217.1–A217, doi: [10.1136/injuryprev-2016-042156.605](#).
- Vévodová Š, Vévoda J, Vetešníková M, et al. The relationship between burnout syndrome and empathy among nurses in emergency medical services. *Kontakt*. 2016; 18(1): e17–e21, doi: [10.1016/j.kontakt.2016.02.002](#).
- Patterson PD, Weaver MD, Weaver SJ, et al. Measuring teamwork and conflict among emergency medical technician personnel. *Prehospital Emergency Care*. 2012; 16(1): 98–108, doi: [10.3109/10903127.2011.616260](#).
- Weibel L, Gabrion I, Aussedat M, et al. Work-related stress in an emergency medical dispatch center. *Annals of Emergency Medicine*. 2003; 41(4): 500–506, doi: [10.1067/mem.2003.109](#).

26. Corcoran J, Townsley M, Wickes R, et al. Community variations in hoax calls and suspicious fires: geographic, temporal and socioeconomic dimensions and trajectories. Report to the Criminology Research Advisory Council. 2012; 48: 10–1.
27. Alrazeeni DM, Sheikh SA, Mobrad A, et al. Epidemiology of non-transported emergency medical services calls in Saudi Arabia. *Saudi Med J*. 2016; 37(5): 575–578, doi: [10.15537/smj.2016.5.13872](https://doi.org/10.15537/smj.2016.5.13872), indexed in Pubmed: [27146623](https://pubmed.ncbi.nlm.nih.gov/27146623/).
28. Leichsenring F, Steinert C, Beutel ME, et al. Quality of depressive experiences in borderline personality disorders: differences between patients with borderline personality disorder and patients with higher levels of personality organization. *Bull Menninger Clin*. 2011; 377(9759): 74–84, doi: [10.1016/S0140-6736\(10\)61422-5](https://doi.org/10.1016/S0140-6736(10)61422-5), indexed in Pubmed: [21195251](https://pubmed.ncbi.nlm.nih.gov/21195251/).
29. Blackwell TH, Kaufman JS. Response time effectiveness: comparison of response time and survival in an urban emergency medical services system. *Academic Emergency Medicine*. 2002; 9(4): 288–295, doi: [10.1197/aemj.9.4.288](https://doi.org/10.1197/aemj.9.4.288).
30. Blackstone EA, Buck AJ, Hakim S. The economics of emergency response. *Policy Sciences*. 2007; 40(4): 313–334, doi: [10.1007/s11077-007-9047-6](https://doi.org/10.1007/s11077-007-9047-6).