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Article

Determination of Ambulance Abuse Level

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Abstract: Emergency Health Services refers to the urgent care. Ambulance abuse threaten the provision of proper health services and at the same time it affects the country's economy negatively. It was aimed to determine ambulance abuse level. This was a retrospective cohort research. In order to carry out our study, we analyzed 12,207 cases who called to the 112 Emergency Ambulance Services between 01.01.2016 and 31.12.2016. The data of the study has been obtained from the Emergency Health Automation System of the Provincial Health Directorate. According to preliminary diagnoses, traumatic cases were found to be 19.4% and cardiovascular cases were 12%. According to the World Health Organization 32 Critical Code List 59.6% of the cases who called to the 112 Emergency Ambulance Services in 2016 were inappropriate. Ambulance abuse rate was 59.6%. The high rate of misuse of 112 emergency ambulances affects the service flow and motivation of the staff negatively and causes extra financial burden. Thereof, awareness trainings should be given to the public and task and duties of the paramedics and emergency medical technicians who work at emergency ambulances should be expanded so that the transfer of unnecessary cases should be prevented.

Keywords: misuse, abuse, ambulance abuse, ambulances, emergency ambulances, Turkey

1. Introduction

Emergency Health Services refers to the urgent care cases that are provided to the patient during the whole process by the unified work of different departments that start at the scene and continue in the hospital environment [1, 2].

The emerging of 112 emergency medical services in our country was created in 1985 by the Ministry of Health at the main arteries of big cities in order to intervene traffic accidents which have serious traumatic urgency. Later, a system under the name of 077 was introduced and the infrastructure of 112 emergency medical services was established [3].

Despite the role and responsibilities of Emergency Health Services and the ambulance organizations involved in these services in providing remedial services for life threatening serious cases and serious injuries, the investigations found out that the group using emergency health services had mild illnesses and injuries in the form of low life risk [4].

It is expected that every patient that applies to ambulance organizations should be carefully evaluated. This situation has also supported improper use of emergency medical services [5]. Other

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reasons supporting inappropriate use of Emergency Health Services are inadequate education and social situations [6].

Abuses such as ambulance services threaten the provision of proper health services and at the same time it affects the country's economy negatively. Therefore, researches on Emergency Health Services are important [5].

It was aimed to determine ambulance abuse level.

2. Materials and Methods

This is a retrospective cohort study. In order to be able to carry out our study, necessary permissions were obtained from Gümüşhane Provincial Health Directorate. 12207 cases who applied between 01.01.2016 and 31.12.2016 to Gümüşhane 112 Emergency Ambulance Service were analyzed. Gümüşhane province is located in the North, in the Black Sea region of Turkey. Our study was carried out through a Microsoft Excel program via the Emergency Health Automation System from the Provincial Ambulance Service Headquarters of Gümüşhane Provincial Health Directorate.

3. Results

In our study, 50.8% of the cases that applied to Gümüşhane 112 Province Ambulance Service in 2016 year were identified as females and 49.2% were males.

Distribution of the cases in Gümüşhane province in year 2016 according to preliminary diagnosis is shown at Table 1.

Table 1. Distribution of the cases in Gümüşhane province in year 2016 according to preliminary diagnosis

Preliminary Diagnoses	Number	%
Other	3446	28.2
Trauma	2140	17.5
Cardiovascular	1471	12.0
Gastrointestinal and metabolic	1283	10.5
Neurological	1122	9.2
Respiratory	854	7.0
Psychiatry	814	6.7
Infection	513	4.2
Genitourinary	401	3.3
Gynecology	131	1.1
Newborn	32	0.3
Total	12207	100.0

As it is seen in Table 1, it has been found out that traumatic cases with 19.4% are in the second place and cardiovascular cases in the third place with a rate of 12%.

Assessment of the cases in Gümüşhane province in year 2016 through some vital findings is shown at Table 2.

Table 2. Assessment of the cases in Gümüşhane province in year 2016 through some vital findings

Consciousness	Number	%	Respiration	Number	%

Open	10796	98.2	Regular	10782	98.2
Closed	124	1.1	No	119	1.1
Confused	40	0.4	Dispne	31	0.3
Conscious Blur	19	0.2	Irregular	29	0.3
Coma	5	0.0	Fast	11	0.1
Semi Coma	1	0.0	Superficial	2	0.0
Total	10985	100.0	Total	10985	100.0

As indicated in Table 2, at the conclusion of the clinical evaluations that the staff had done, 98.2% of the cases were found to be normal in terms of consciousness and only 1.8% were abnormal.

Distribution of cases in Gümüşhane province in year 2016 according to WHO critical code list is shown at Table 3.

Table 3. Distribution of cases in Gümüşhane province in year 2016 according to WHO critical code list

Distribution of cases according to WHO critical code list	Number	%
1- Those who are not on the critical code list according to WHO	7277	59.6
2- Myocardial infarction, arrhythmia, hypertension and severe cardiac events	1190	9.7
3- Height fall, upper extremity fractures	763	6.3
4- Traffic accidents	688	5.6
5- Asthma attack, acute respiratory problem	367	3.0
6- Acute abdomen	301	2.5
7- Any situation that leads to loss of consciousness	297	2.4
8- High fever	248	2.0
9- Poisonings	171	1.4
10- Migraine or vomiting, headaches that develop with loss of consciousness	116	1.0
11- Sudden paralysis, Cerebrovascular episodes	105	0.9
12- Birth action that has begun	103	0.8
13- Spine and lower extremity fractures	103	0.8
14- Renal colic	80	0.7
15-Terrorism, sabotage, shooting, stabbing, fighting, beating, cutting-piercing tool injuries	78	0.6
16- Diabetic, uremic coma	71	0.6
17- Severe general condition disorder	57	0.5
18- Acute massive hemorrhages	48	0.4
19- Suicide attempt	42	0.3
20- Acute psychotic states	27	0.2
21- Serious burns	18	0.1
22- Serious eye injuries	15	0.1
23- Newborn comas	12	0.1
24- Serious allergy, anaphylaxis	10	0.1
25- Dialysis patient accompanied with generalized impairment	7	0.1
26- Freezing, cold impact	6	0.0
27- Drowning in water	4	0.0
28- Electric shock	2	0.0
29- Heat shock	1	0.0
30- Meningitis, encephalitis, brain abscess	0	0.0
31- Decompression	0	0.0
32- Rape	0	0.0
33- Serious work accidents	0	0.0

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Total	12207	100.0

As shown in Table 3, ambulance abuse level was 59.6% in our province.

Distribution of cases in Gümüşhane province in year 2016 according to age groups is shown at Table 4.

Table 4. Distribution of cases in Gümüşhane province in year 2016 according to age groups

Age Group	Medical		Trauma		Unneeded		Total	
	N	%	N	%	N	%	N	%
Newborn and infant	33	44.6	9	12.2	32	43.2	74	100.0
1-8	116	36.3	78	24.4	126	39.4	320	100.0
9-17	236	23.3	182	17.9	596	58.8	1014	100.0
18-29	580	22.8	452	17.8	1515	59.4	2543	100.0
30-40	261	24.9	246	23.5	541	51.6	1048	100,0
41-65	812	33.3	452	18.5	1174	48.2	2438	100.0
65 +	1170	33.0	300	8.5	2074	58.5	3544	100.0
Total	3208	29.2	1719	15.7	6058	55.1	10985	100.0

As indicated in Table 4, the groups with the most inappropriate ambulance usage were determined as 18-29, 9-17, 65+ age groups respectively.

4. Discussion

In the study we conducted, the other group was 28.2%, traumatic cases were 17.5%, cardiovascular diseases were 12.0%, GIS and metabolic group were 10.5%, while the cases presented in Emergency Medical Services would be examined according to the preliminary diagnoses. The other pre-diagnosis group includes cases which are not ill and cannot be pre-diagnosed, and occupy a small share within the other group.

In the study with reference to the 32 Critical Code List published by World Health Organization, ambulance abuse level was found to be 59.6%, in other words, most of the cases taken by the ambulance were unnecessary for the purposes of ambulances. Another fact that supports the inappropriate use of ambulances is the stability of the vital findings of patients carried with ambulances.

We found out that the 65+ age group was in the first place with 32% and 3544 cases, followed by the 18-29 age groups with 23.1% and 2543 cases. The increasing number of illnesses and the necessity of chronic diseases care led the need for emergency services and ambulance in the elderly to the first place [8].

We found out that age groups with the highest rate of ambulance abuse were 18-29, 9-17 and 65+ age groups, respectively. Although we did not find any statistically significant difference between these groups (p=0.08), we determined that the 18-29 age group was at the first order. This shows us that ambulance abuse begin at young ages. Again, this shows us that the problem is a fundamental problem and that the problem can be solved with the standard measures such as education and awareness-raising. It is thought that different systematic methods like home care, chronic care, policlinic transplantation and transportation for medical examination should be used as an alternative in order to reduce the high rate of ambulance abuse among elderly, because the transport process mainly takes place independently from life-threatening cases.

We determined in our study that 71.6% of the ambulance duties resulted in transfer to the hospital. This constitutes one of the reasons for excessive unnecessary loading in emergency departments.

According to Ayten et al.'s study in Denizli in 2015, the first group was other group with 25.7%, the second group was traumatic cases with 22,7% and the cardiovascular system diseases with a rate of 19% [7].

According to a study conducted by Yaylacı and his colleagues in İstanbul in year 2013, among cases that ambulances went 36.8% of the cases were due to trauma in the first place, 16.9% in the second place due to infectious diseases, and 16.9% in the neurological preliminary diagnosis group out [8]. According to a study conducted by Benli and his colleagues in Karabük in year 2014, traumatic cases ranked first with 26.33%, cardiovascular diseases with 19.45% and psychiatric diseases with 15.45% [9]. According to the survey conducted by Zenginol and his colleagues in Gaziantep in year 2011, traumatic cases with 29.80% were in the first place, cardiovascular system diseases with 19.14% in the second place and other group with 11.39% in the third place [10]. According to the research conducted by the Önge and their friends in Adana in year 2013, traumatic cases were the first with 28.4%, neurological cases were second with 16.4% and cardiovascular cases followed with 14.2% [11].

When we examine the 112 Emergency Health Services in terms of the level of ambulance abuse in the light of the relevant data we see that one of the first studies on this subject was made in Birmingham, England, which had a population of 1200000 in the period that the research took place. In year 1980, Morris and colleagues found that the rate of ambulance abuse was 51.7% [12]. Gardner and colleagues who carried out a similar research in the year 1990 found out that ambulance abuse was 62 [13]. According to a study conducted by Köse et al. in Van, it was determined that 88.4% of the patients who applied to the emergency service were discharged from the emergency service [14].

According to the study conducted by Atilla and his colleagues in İzmir in year 2010, it was determined that 53.6% of the patients were discharged from the emergency service [15]. According to the research conducted by Ayten in year 2015, 97% of the calls to Denizli's 112 in year 2012 and 94% in year 2013 were unsubstantial and inappropriate calls [7]. According to a research conducted in İstanbul in year 2013, Yaylacı and his colleagues have found out that ambulance abuse rate was 37.7% [8]. In the study conducted by Duran in Kayseri in year 2015, ambulance abuse rate was determined as 59% [16]. In year 2017, Silibolatlaz found in Adana that the rate of ambulance abuse was 53.7% and 78% of the patients were discharged without hospitalization from emergency service [17].

Kıdak and his colleagues examined the distribution of cases according to age groups in their study conducted in İzmir province and determined that the first group was 65+ age group with 26.7% [18]. Aydın et al. found out in the study they have conducted that, over 60 years old group was the first with a rate of 24% and the 20-29 age group was in the second place with 22% [19]. Zenginol et al. has found out that the age group of 65 years was in the first place with 17.9% and the group of 16-25 years was in the second place with 17.8% [10].

Yaylacı and colleagues determined that the average age of the patients who were considered as urgent was found to be 54.31% and the average age of the patients not accepted as urgent was 38.07% in their survey [8].

Our study is similar to the studies conducted in our country and worldwide. Whether in our country or in the world, ambulance abuse is a current problem [20]. Despite the increasing capacity of Emergency Health Services and Ambulances every year, studies have not found any positive development towards ambulance abuse. This situation emerges as a situation that needs to be overcome in our country. Ambulance abuse results in worn out personnel in the professional sense, adverse effects on service flow, economic burden on the country.

In a study conducted by Greenhalgh et al. it has been found out that subject to further empirical testing, nonadoption, abandonment, scale-up, spread, and sustainability (NASSS) could be applied across a range of technological innovations in health and social care [21].

The Prime Ministry circular issued on 9 August 2010 states that regardless of having any social security and what kind of social security they have the people applying to the private or public health institutions in life-threatening emergency situations should be treated free of charge [22].

Authors should discuss the results and how they can be interpreted in perspective of previous studies and of the working hypotheses. The findings and their implications should be discussed in the broadest context possible. Future research directions may also be highlighted.

5. Conclusions

In the study with reference to the 32 Critical Code List published by World Health Organization, ambulance abuse was found to be 59.6%. As stated in our study and in other studies, the high rate of use out of the emergency has revealed ambulance abuse. One of the preventive measures in this situation might be that people who do not have an ambulance indication may be charged additional fees. In order to prevent ambulance abuse, public awareness trainings should be implemented and the task definitions and duties of the emergency medical technicians and paramedics who work in ambulances should be expanded so that they can prevent the transfer of unnecessary cases.

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