ORIGINAL ARTICLE

Evaluation of trauma cases in different types of mass gathering events

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ABSTRACT

BACKGROUND: There are several factors affecting trauma cases in mass gatherings (MG). Event type, mood of the crowd, age, gender and educational background are among these factors. It is to identify the relationship between the event types of trauma cases and temperature variables observed in MG.

METHODS: It is a descriptive epidemiological study. The universe of the research consists of 112 emergency medical service records (ambulance) in organizations such as Çanakkale Victory and Martyrs' Memorial Day (ÇVMMD), Zeytinli Rock Fest, Deaflympics, and European Youth Olympic Winter Festival (EYOF). For the statistical evaluations of the study, frequency analysis, Chi-square test, and logistic regression were used.

RESULTS: Within the scope of the research, 474 emergency medical service cases were examined. About 49.5% (n=235) of the cases took place at the DEAFOLIMPICS. About 57.6% (n=273) of the cases are male. The age average of the cases is 30.3±16.5 (Min: 0, Max: 92). When the pre-diagnosis range at the ÇVMMD is examined, it is seen that 27.7% (n=20) of the cases are trauma cases while 72.2% (n=52) are non-trauma cases. Among the trauma cases, the most frequently observed ones are soft-tissue trauma, multi-trauma, lower limb injury, and head trauma. When the other cases are examined, the most common ones are angina pectoris, nausea-vomiting, asthma, and ache. In the research, 38.3% (n=90) of the cases at the DEAFOLIMPICS are trauma cases, while 61.7% (n=145) are non-trauma cases. While the trauma cases mostly consist of soft-tissue injury and lower limb injury, the non-trauma cases include nausea-vomiting and upper respiratory infections. While the trauma cases were caused by multi-trauma, sharp object injury, soft-tissue injury, and head trauma, the pre-diagnosis of the non-trauma cases mainly included mental confusion and behavioral disorder due to use of alcohol; conversion; behavioral changes due to use of substance and drug use; hypotension; and allergic reaction.

CONCLUSION: As a consequence of the logistic regression modeling, the trauma cases were found to be 1.6 times ($p<0.05$) higher in men than women and 9.5 times more in those who participated in the EYOF event than those who participated in the ÇVMMD event ($p<0.05$).

Keywords: Emergency medical services; event type; logistic regression; mass gathering; patient presentation rate; temperature; trauma.

INTRODUCTION

Although mass gatherings (MG) occur world-wide, there is no universal definition yet.[1–4] According to the WHO, MGs are defined as pre-planned or unplanned gatherings of people pushing or exceeding the limits of community's emergency plans.[5–12] MG types are usually in the form of religious commemorations, sports games, and musical festivals. The most (common/endemic) non-contagious health problems seen in MGs are headache, abdominal complaints, abrasion/laceration, orthopedic discomfort, eye injury, syncope/dizziness, burns, chest pain, and temperature related injuries, respectively.[13] In MGs, Patient-Presentation Rate (PPR) is seen to range from 0.12 to 0.90. Leading causes of mortality during MGs include stampedes and temperature-related diseases.[14] Alcohol and drug uses are common in many festivals. In al-

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cohol-allowed events, the rate of cases that require medical intervention are 10% more than other MG types.[5–11]

Participatory features of MGs (sociodemographic characteristics: Age, gender, educational level, cultural characteristics, etc.), time-wise features (frequency of occurrence, period of gathering, day/night, and seasonal), event features (event type, condition of the event area, mobility of the crowd, mood, dynamics of the event, etc.), and variables such as weather are among the important features that affect morbidity.

The largest MG event in the world is pilgrimage which is held by millions of people from different cultures every year.[15–18] People are injured or killed while stoning the demon symbol due to the number of pilgrims or the mismanagement of the crowd density. During this ceremony, 4 pilgrims died in 1994, 270 pilgrims in 1998, 180 pilgrims in 2004, and 362 pilgrims in 2006.[19] The number of people requiring medical treatment in any musical event includes a wide variety of disease types. These include conditions caused by traumatic injuries such as contusion, falls, fights; hyperventilation, dehydration, sunstroke, hyperthermia or hypothermia, emotional and anxiety attacks, food poisoning, and serious health problems due to alcohol or drug intake.[20] Typically, rock concerts have 2.5 times more health-care use than other concerts.[7] Situations that require surgical interventions might occur due to falls, aggression, contusions between barriers, and "thrown objects" that cause head trauma. The rate of severe traumas in commonly performed rock concerts is shown as 1.4/10,000.[7] There should be medical rescue teams who are particularly trained for particular injuries expected to happen according to the type of sports events.[21] Medical rescue teams should be physically, psychologically, and technically ready in a perfect way.[21] In Formula 1 Singapore Night Races, PPR was found to be 2.7, and Transport to Hospital Rate was 0.034.[22] The majority of applications/admissions (%58.7) in races are musculoskeletal injuries which include fluid retention, lacerations, abrasions, sprains, and strains.[22] In the study, the average temperature was calculated as 31.8°C and the average relative humidity was 93.8%, while the temperature index 50.3°C.[22] The temperature-related applications are seen to be over 19%.[22] These include diagnoses of dehydration, headache, sunburn, burnout, and fainting.[22]

The objective of this study is to identify the relationship between the type of activity and temperature of trauma cases seen in MG.

MATERIALS AND METHODS

This study is a descriptive and cross-sectional epidemiological study. The study was designed as a retrospective record research. The study assessed the medical case records that of some MG events kept by the 112 Emergency Ambulance Service for accidents and injuries between 2015 and 2018.

Hypothesis of the Study

- H0 There is no difference between medical cases encountered in MG according to event types?
- H1 There is a difference between medical cases encountered in MG according to event types?
- H0 In MG, temperature is not a factor that affects the types of medical cases?
- H1 In MG, temperature is a factor that affects the types of medical cases?

Universe of the Study

In the scope of the study, pre-planned events attended by at least 1000 or more participants were selected (Table 1). The universe of the study includes all the medical cases which occurred during European Youth Olympic Winter Festival (EYOF2017) (February 11–18, 2017), Çanakkale Victory and Martyrs' Memorial Day and Anzac Ceremonies/Events (ÇVMMD) (April 24–25, 2017), 23rd Deaflympics (July 18–30, 2017), Zeytinli Rock Fest (August 23–27, 2017).

Editing and Analysis of the Data

The data were obtained from the Directorate General for Health Information Systems of the Ministry of Health, Republic of Turkey (MoH, Emergency Health Automation Systems/EHOS). The data stored in the General Directorate Emergency Medical Automation System were converted to Excel format and transferred to the researcher through external hard drive and e-mail. The received data were given as seven separate pages in Excel format: (1) Case detail, (2) application information, (3) medicine information, (4) diagnostic information, (5) device information, (6) measurement information, and (7) denial information, respectively. The cases which occurred at the ÇVMMD and Zeytinli Rock Fest (ZRF) were recorded among EMS routine cases without being standardized. Therefore, they were separated from the normal data.

Table 1. Distribution of Participant Numbers of Some Mass Gatherings in Turkey between 2015–2018 (Ankara 2019)

	2015	2016	2017	2018
ÇVMMD (2*4=8 days)[1]	50.000	10.000	10.000	10.000
ZRF (5 days)[2]	100.000	150.000	–	–
DEAFLYMPICS[3] (13 days)	–	–	8.000	–
EYOF[4] (8 days)	–	–	13.000	–

[1]The data were obtained from authorities performing emergency health organizations. [2]The data were obtained from biletix.com on which event tickets were sold. [3]The data were obtained from the official website of the event. Access: 15 March 2019, http://www.deaflympics2017.org/tr/samsun-deaflympics-2017-sona-erdi-detay/282. [4]The data were obtained from the official website of the event. Access: 15 March 2019, https://www.eyof2017erzurum.org/sayfa/detay/kapanis-basin-toplantisi-gerceklestirildi/253.

The data constituted by the experts were examined by the researcher and the data related to the study were transferred to the database created in SPSS 22.0. The data transferred to SPSS were selected according to the following criteria. To determine the cases, the health coordinators of the MGs were communicated through telephone and asked how the cases were recorded.

All the recordings coded with ODD55 and ODD25 from the DEAFLYMPICS and EYOF were transferred to the database created through SPSS 21.0. The cases at the ÇVMMD and ZRF were not carried out by means of standard coding. Therefore, the data were obtained based on the case address. At the ÇVMDD, the obtained data consist of keywords such as "Eceabat, marina, mimosa cafe, health boat, lone pine, heliport, chunuk bair, Kireçtepe, 57th regiment walking, tent hospital, Anzak/Anzac Bay, simulation center, Vip, VIP, monument, camp site" between the dates of April 24–25. It was understood that there was not a special record kept for the ZRF event. Therefore, the data were created by scanning concepts such as "Rock, Rack, Festival, Zeytinli, Concert, Tent, Camping Site, Rak, Altınkum Beach."

The data on seven separate pages in Excel were transferred to the database created in SPSS 22.0 through search page (CTRL+F) by Case ID number.

Frequency Analysis

For the descriptive analysis of the study, frequency distribution between dependent variables and independent variables was used. Tables were generally created based on the event type to be able to make comparisons. Standard deviation, median, minimum, and maximum values for descriptive statistics of some variables were calculated.

Advanced Statistical Analysis

For binary analyses, Chi-square test was applied between independent variables such as, rate of going through a trauma and gender, age (0–17, 18–34, 35–64, and +65), event type (ÇVMMD, DEAFLYMPICS, ZRF, EYOF), and temperature (temperature range = low, temperature range = average, temperature range = high). For multivariate analyses, the binary logistics model Bacward (cond) method was used in the prediction of traumatization status and possible factors determined in the previous univariate analyses ($p<0.20$). A logistic regression model was employed between the dependent variable in trauma dichotomy structure and the independent variables including gender, age, type of event, and temperature. In the analyses, the Hosmer-Lemeshow test was used for model compatibility, and the cases with lower than 5% of type I error level were interpreted to be statistically significant.

Table 2. Distribution of Pre-Diagnoses in 112 Ambulance Cases at the Çanakkale Victory and Martyrs' Memorial Day and Anzac Ceremonies (ASOS, Ankara 2019)

Trauma cases (n=20)		**Other cases (n=52)**	
Multi-trauma	4 (5.5)	Abdominal and pelvic pain	2 (2.8)
Soft tissue trauma	7 (9.7)	Pain	3 (4.2)
Head trauma	2 (2.8)	Acute appendicitis	1 (1.4)
Sharp object injury	1 (1.4)	Acute MI	2 (2.8)
Lumbar spine and pelvis fracture	1 (1.4)	Acute sinusitis	1 (1.4)
Femoral fracture	1 (1.4)	Angina pectoris	5 (6.9)
Lower limb injury	4 (1.4)	Asthma	3 (4.2)
Other cases (n=52) (Continues)		Digestive system disorders	2 (2.8)
Hypotension	5 (6.9)	Headache	1 (1.4)
Urinary system injuries	1 (1.4)	Dizziness (Vertigo)	1 (1.4)
Arrhythmia	1 (1.4)	Nausea-Vomiting	5 (2.8)
Conjunctivitis	1 (.4)	Respiratory system ailments	1 (1.4)
Paralytic ileus	1 (1.4)	Diarrhea and gastroenteritis	2 (2.8)
Kidney disorders	1 (1.4)	Dorsalgia	1 (1.4)
Fewer	1 (1.4)	Hypertension	2 (2.8)
Syncope	2 (2.8)	Gastritis and duodenitis	1 (1.4)
Cerebrovascular diseases	2 (2.8)	General symptoms	2 (2.8)
Sudden death	1 (1.4)	Eyelid inflammation	1 (1.4)

*Diagnostic information for 2018 could not be obtained because it was not in the database (n=35). The percentages were calculated for 72 cases.

Ethical Subjects and Permissions

For the study, a permission with decision no 15/233 dated August 15, 2018, was received from the Non-Entrepreneurial Ethics Board of Bezmialem Vakıf University University. The permission with decision no 75730711 dated December 14, 2017, was obtained from The Ministry of Health. To examine the temperature-related variables, the permission to access the data was obtained from The General Directorate of Meteorology with decision no 95579059-107-E.48887 dated May 16, 2019.

Limitations of the Study

The study has some limitations. First, since the study is a retrospective record research, there may be a deficiency in the data depending on lack of data. Second, there may be some deficiencies in the records of minor injuries and interventions in the MG events. Third, the research data were acquired from the MoH National Database. For this reason, the fact that some information in the written forms were not transferred to the digital database may be another limitation of the research. Fourth, in the scope of the study, only the data obtained from MoH were used. Fifth, the health interventions performed by the private health providers or crews/participants as well as the interventions performed in mobile hospitals were not involved in the study. Sixth, the health personnel's lack of knowledge about data recording may have led to a non-standardized registry situation.

Table 3. Distribution of pre-diagnoses in 112 Ambulance cases at the 23th DEAFLYMPICS in Samsun in 2017 (ASOS, Ankara 2019)

Trauma cases (n=90)	
Lower limb injury	2 (0.9)
Lower, limb injuries (contusion, dislocation)	12 (5.1)
Femoral fracture	1 (0.4)
Foreign object in the eye	3 (1.3)
Rib fractures	1 (0.4)
Head trauma	5 (2.1)
Abdominal, lumbar and pelvis injuries	2 (0.9)
Muscle and tendon injury	3 (1.3)
Sharp object injury	3 (1.3)
Tympanic membrane perforation	1 (0.4)
Shoulder dislocation and sprain	2 (0.9)
Shoulder and upper limb injury	3 (1.3)
Thorax injury	1 (0.4)
Upper limb fracture	2 (0.9)
Upper limb injuries (contusion, dislocation or sprain)	6 (2.6)
Soft tissue injuries	43 (18.3)
Other cases (n=145)	
Abdominal and pelvic pain	6 (2.6)
Pain	12 (5.1)
Angina pectoris	1 (0.4)
Anxiety disorders	1 (0.4)
Asthma	1 (0.4)
Acute respiratory infection	5 (2.1)
Fewer	1 (0.4)
Connective tissue diseases	2 (0.9)
Intestinal diseases	1 (0.4)
Headache	8 (3.4)
Dizziness	1 (0.4)
Brain neoplasm	1 (0.4)
Pain the throat and chest	1 (0.4)
Nausea-vomiting	15 (6.4)

Other cases (n=52) (Continues)	
Diarrhea and gastroenteritis	9 (2.7)
Dorsalgia	3 (1.3)
Epilepsy	3 (1.3)
General symptoms and signs	5 (2.1)
Food poisoning	4 (1.7)
Chest burning	2 (0.9)
Exposure to sunlight	1 (0.4)
Hemorrhoids	1 (0.4)
Hypertension	6 (2.6)
Hypoglycemia	1 (0.4)
Hypotension	5 (2.1)
Bites	1 (0.4)
Abnormal findings in urine	1 (0.4)
Women's health diseases	4 (1.7)
Bleeding	1 (0.4)
Liver failure	1 (0.4)
Cardiac arrhythmias	2 (0.9)
Itching	2 (0.9)
Conjunctivitis	6 (2.6)
Conversion	1 (0.4)
Migraine	2 (0.9)
Shortness of breath	2 (0.9)
Otitis externa	1 (0.4)
Psychological and behavioral risorders	1 (0.4)
Syncope and fainting	6 (2.6)
Cerebrovascular problems	1 (0.4)
Digestive system disorders	2 (0.9)
Tachycardia	1 (0.4)
Urticaria	2 (0.9)
Upper respiratory infections	10 (4.3)
Burn (wrist)	1 (0.4)
Fatigue	1 (0.4)

RESULTS

When the pre-diagnosis range at the ÇVMMD was examined, 27.7% (n=20) of the cases consist of trauma cases and 72.2% (n=52) consist of non-trauma cases. Among the trauma cases, the most frequently observed ones are soft tissue trauma, multi-trauma, lower limb injury and head trauma. When the other cases are examined, the most

Table 4. Distribution of pre-diagnoses in 112 Ambulance Cases at the European Youth Olympic Winter Festival in Erzurum in 2017 (ASOS, Ankara 2019)

Trauma cases (n=49)		**Other cases (n=11)**	
Soft tissue trauma	17 (28.3)	Pain	1 (1.7)
Whiplash injury	2 (3.3)	Angina pectoris	1 (1.7)
Multi-trauma	17 (28.3)	Headache	2 (3.3)
Knee injury	2 (3.3)	Sinusitis	1 (1.7)
Wrist injury	1 (1.7)	Loss of sense	1 (1.7)
Tendon injury	1 (1.7)	General symptoms	1 (1.7)
Sharp object injury	2 (1.7)	Hypertension	1 (1.7)
Shoulder dislocation and sprain	1 (1.7)	Gynecological diseases	1 (1.7)
Shoulder and upper arm contusion	2 (3.3)	Tachycardia	1 (1.7)
Upper limb injuries	3 (5.0)	High fewer	1 (1.7)
Head injury	1 (1.7)		

Table 5. Distribution of pre-diagnoses in 112 Ambulance Cases at the Zeytinli Rock Fest in Edremit District of Balıkesir between 2015 and 2016 (ASOS, Ankara 2019)

Trauma cases (n=13)		**Other cases (n=59)**	
Ankle dislocation	1 (1.4)	Abdominal and pelvic pain	1 (1.4)
Ankle injury	1 (1.4)	Allergic reaction	3 (4.2)
Wrist and superficial hand injury	1 (1.4)	Mental confusion and behavioral disorder due to	15 (20.8)
Head trauma	2 (2.8)	alcohol use	
Sharp object injury	2 (2.8)	Angina pectoris	3 (4.2)
Multi-trauma	4 (5.6)	Anxiety disorders	2 (2.8)
Soft tissue trauma	2 (2.8)	Multi-trauma	4 (5.6)
		Nausea-vomiting	2 (2.8)
		Diarrhea and gastroenteritis	1 (1.4)
		Dorsalgia	1 (1.4)
		Emotional status disorders	1 (1.4)
		Eyelid defects	1 (1.4)
		Epilepsy	2 (2.8)
		Hypotension	6 (8.3)
		Mind and behavioral disorder due to medicine use	3 (4.2)
		Cardiac arrest	1 (1.4)
		Redness	1 (1.4)
		Conversion	9 (12.5)
		Renal colic	1 (1.4)
		Syncope	4 (5.6)
		Cerebral infarction	1 (1.4)
		Respiratory insufficiency	1 (1.4)

Table 6. Distribution of trauma cases in some mass gatherings in Turkey between 2015–2018 by event type (ASOS, Ankara 2019)

	Trauma n (%)	Non-trauma n (%)
Event type		
ÇVMMD	20 (11.6)	52 (19.5)
DEAFLYMPICS	90 (52.3)	145 (54.3)
EYOF	49 (28.5)	11 (4.1)
ZRF	13 (7.6)	59 (22.1)
		p<0.05, Chi-Square: 62.9
Gender		
Male	111 (64.5)	139 (52.1)
Female	61 (35.5)	128 (47.9)
Total	172	267
		p<0.05, Chi-Square: 6.6
Age		
0–17	25 (14.5)	23 (8.6)
18–34	112 (65.1)	146 (54.7)
35–64	29 (16.9)	78 (29.2)
65+	6 (3.5)	20 (7.5)
Total	172	267
		p<0.05, Chi-Square: 14.6
Temperature		
Low	49 (28.5)	11 (4.1)
Average	20 (11.6)	52 (19.5)
High	103 (59.9)	204 (69.9)
Total	172	267
		p<0.05, Chi-Square: 14.6

ÇVMMD: Çanakkale Victory and Martyrs' Memorial Day; EYOF: European Youth Olympic Winter Festival; ZRF: Zeytinli Rock Fest.

common ones are angina pectoris, nausea-vomiting, asthma, and ache (Table 2).

In the research, 38.3% (n=90) of the cases at the DEAFLYMPICS are trauma cases while 61.7% (n=145) are non-trauma cases (Table 2). While the trauma cases mostly consist of soft-tissue injury and lower limb injury, the non-trauma cases include nausea-vomiting and upper respiratory infections (Table 3).

About 81.6% (n=49) of the EYOF cases consist of trauma cases, while 18.4% (n=11) of them are non-trauma cases (Table 4). When the diagnoses of the trauma cases are considered, multi-trauma and soft-tissue injury are seen to be the most common ones, while headache is among the pre-diagnoses of the non-trauma cases (Table 4).

In the research, it was found that 18.0% of the cases at the ZRF were trauma cases, while 82% of them were non-trauma cases (Table 5). While the trauma cases were caused by multi-trauma, sharp object injury, soft-tissue injury, and head trauma, the pre-diagnosis of the non-trauma cases mainly included mental confusion and behavioral disorder due to use of alcohol; conversion; behavioral changes due to use of substance and drug use; hypotension; and allergic reaction (Table 5).

According to the event types in the study, 52.3% of the trauma cases occurred at the DEAFLYMPICS, 28.5% of them at the EYOF, 11.6% of them at the ÇVMMD, and 7.6% at the ZRF. The trauma cases seen at the DEAFLYMPICS are statistically significant compared to the other event types (p<0.05, Chi-square: 62.9) (Table 6).

In the study, 64.5% (n=111) of the trauma cases were male and 35% (n=61) were female. In man, the possibility of going through a trauma in MGs is statistically higher compared to women in a significant way (p<0.05, Chi-square: 6.6). In the study, according to the age range, the percentages are successively as follows: 65.1% (n=112) are between 18–34 years of age; 16.9% (n=29) are between 35-64 years of age; 14.5%' (n=25) are between 0–17 years of age; and 3.5% (n=6) are 65 years of age or above. Those between 18 and 34 years of age are statistically higher than the other age groups in a significant way (p<0.05, Chi-square: 62.9) (Table 6). In the study, 59.9% (n=103) of the cases occurred at high temperatures, 28.5% (n=49) at low temperatures, and 11.6% (n=20) at average temperatures. The number of the trauma cases occurred at high temperatures is statistically significant compared to the low and average temperature trauma cases (p<0.05, Chi-square 53.4). In the logistic regression modeling in which the relationship between the trauma status and the selected variables was examined, a relationship was found between the variables of gender and type of events. Considering this, the possibility of suffering from trauma is 1.6 (Confidence Interval CI=1.022–2.420, p<0.05) times higher in men than women, and the possibility of suffering from trauma in people who attended the ÇVMMD is 9.5 (CI=3.989–22.571, p<0.05) times higher than those who participated in the EYOF (Table 7). No relationship was found between temperature and age and cases of trauma.

DISCUSSION

In the study, when the trauma and non-trauma cases were examined, the trauma-induced cases at the DEAFLYMPICS were statistically higher compared to the other MGs (p<0.05). The trauma cases were found to be significantly higher in men than women (p<0.05). When the trauma cases were evaluated according to age groups, the age group between 18 and 34 was found to be statistically significant. The most common health problems consist of minor problems (e.g., headache, neck pain, and fluid retention) at the rate of 41.1% (n=60). [23] This is, then, followed by sprains and strains, bug bites

Table 7. Results of logistic regression between trauma status and some variables (Ankara, 2019)

	Trauma status		
	n	AVG (95% GA)	p
Gender			
Female (Ref)	189		
Male	250	1.573 (1.022–2.420)	0.039
Age			
0–17 years of age (Ref)	48		
18–34 years of age	258	1.123 (0.552–2.286)	0.749
35–64 years of age	107	0.531 (0.239–1.181)	0.121
Over 65 years of age	26	0.571 (0.175–1.866)	0.354
Event type			
ÇVMMD (Ref)	72		
DEAF	235	1.446 (0.774–2.702)	0.248
EYOF	60	9.489 (3.989–22.571)	0.000
ZRF	72	0.464 (0.202–1.069)	0.071
Invariant		-0.998	0.019
AC: Accurate Classification		69.5%	
HL: Hosmer-Lemeshow		0.460	
Ref: Reference			
Analyzed independent variables		Gender, age, event type, temperature	

ÇVMMD: Çanakkale Victory and Martyrs' Memorial Day; EYOF: European Youth Olympic Winter Festival; ZRF: Zeytinli Rock Fest.

at the rate of 26.7% and major injuries (fractures and lacerations) at the rate of 13.7%.[23] In the same study, while the average temperature of the events was between 20° and 25°, there were, unlike the data in the literature, less patient applications in the events above 25° than in the other events.[23] During the pilgrimage worship in 1989, the temperature was 48.7°, the highest one, and on July 3, there were the most deaths with 410 deaths.[24] Every 10° increase in the temperature index triples the number of patients in every 10,000 participants.[7,25,26] The results of the research do not confirm this data. Events in cold weather generally have less patient application rates.[7] Zeitz et al.[27] found a significant relationship between maximum daily temperature and patient applications.[28] In the research conducted in Singapore Formula 1 Races (2009–2012), no relationship between the temperature and PPR was found.[22] It is similar to the results of this research.

Conclusion

It is seen that there are differences in PPR and TTR rates according to activity types in MG. Especially in terms of sports games, EMS should work specifically for trauma cases. Types of trauma cases may vary according to the types of sports games and participant characteristics. It is observed that factors such as disability, age, and gender of the participants affect the type of cases. Considering the data during the research period, more studies are needed on the area of MG. They need to be studied in detail in massive data sets collected for Turkey.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Kitlesel toplanmalarda farklı etkinlik türlerindeki travma olgularının değerlendirilmesi

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AMAÇ: Kitlesel toplanmalarda travma olgularını etkileyen pek çok faktör bulunmaktadır. Bu faktörler arasında etkinliğin türü, sıcaklık, kalabalığın ruh hali, yaş, cinsiyet, eğitim durumu gibi özelliklerdir. Bu araştırmanın amacı kitlesel toplanmalarda görülen travma olgularının etkinlik türü ve sıcaklıkla olan ilişkisini belirlemektir.

GEREÇ VE YÖNTEM: Araştırma tanımlayıcı tipte epidemiyolojik bir araştırmadır. Araştırmanın evrenini Türkiye'de gerçekleştirilen Çanakkale Kara Savaşları'nı Anma Etkinlikleri (ÇKSAE), Zeytinli Rock Festivali (ZRF), İşitme Engelliler Yaz Olimpiyatları (DEAFOLIMPICS) ve Kış Avrupa Gençlik Olimpik Festivali (EYOF) organizasyonlarındaki 112 acil sağlık hizmetleri (ambulans) kayıtları oluşturmaktadır. İstatistiksel değerlendirmede frekans analizi, ki-kare testi ve lojistik regresyon analizi uygulandı.

BULGULAR: Araştırma kapsamında 474 acil sağlık hizmetleri vakası incelendi. Araştırmada olguların %49.5'i (n=235) DEAFOLIMPICS'de gerçekleşti. Olguların %57.6'sı (n=273) erkekti, yaş ortalaması 30.3±16.5 (Min: 0, Maks: 92) idi. Araştırmada ÇKSAE'de ön tanıların dağılımı incelendiğinde %27.7'si (n=20) travma olguları, %72.2'si (n=52) travma olmayan olgulardı. Travma olguları arasında yumuşak doku travması, multitravma, alt ekstremite yaralanması, kafa travması ilk sıradaydı. Diğer olgular incelendiğinde en çok anjina pektoris, bulantı ve kusma, astım, ağrı yer almaktaydı. Araştırmada DEAFOLIMPICS'de olguların %38.3'ü (n=90) travma olguları oluştururken, %61.7'si (n=145) travma olmayan olgular oluşturmaktaydı. Travma olgularında en çok yumuşak doku yaralanması ve alt ekstremite yaralanması oluştururken, travma olmayan olgularda bulantı ve kusma ile ÜSYE oluşturmaktaydı. Araştırma kapsamında EYOF'de olguların %81.6'sı (n=49) travma olgusuyken, %18.4'ü (n=11) travması olmayan olgulardı. Travma olguları tanılarına bakıldığında en çok multitravma ile yumuşak doku yaralanması yer alırken, travma olgusu olamayan ön tanılar incelendiğinde baş ağrısı yer almaktaydı. Araştırmada ZRF'de olguların %18.0'ı travma olguarı oluştururken, %82'si travma olmayan olgulardır. Travma olgularını multitravma, kesici delici alet yaralanması, yumuşak doku yaralanması ve kafa travması oluştururken, travma olgusu olmayan ön tanılarda ilk sırada alkol kullanımına bağlı zihin ve davranış bozukluğu, konversiyon, madde ve ilaç kullanımına bağlı davranış değişiklikleri, hipotansiyon, alerjik reaksiyondur.

TARTIŞMA: Sonuç olarak, lojistik regresyon modellemesinde travma olgularını geçirme durumu erkeklerin kadınlara göre 1.6 kat ($p<0.05$), EYOF etkinliğinde ÇKSAE etkinliğine katılanlara göre 9.5 kat daha fazla bulunmuştur ($p<0.05$).

Anahtar sözcükler: Acil sağlık hizmetleri; ambulans; hasta başvuru hızı; kitlesel toplanma; travma.

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