

Research Paper

Investigating the Prevalence and Etiology of Accidents Recorded at Emergency Management Center of Gonabad City Using the Pareto Chart in 2018



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Key words:

Pareto chart,
Emergency hospital
service, Accident

ABSTRACT

Aims Accidents are the leading causes of hospitalization and death. This study investigates the prevalence and causes of accidents recorded in Gonabad City emergency hospital service using the Pareto chart from 2016 to 2018.

Methods & Materials This descriptive and analytic study reviewed about 12281 emergencies recorded during 2016-2018, and the key variables such as the number of incidents, causes of incidents, age, gender, and time of incidents were collected for transport and non-transport incidents. Data analysis was performed using a Pareto chart in Minitab V. 16, SPSS V. 18, and EXCEL 2010.

Findings Based on the results, the highest rate of the incidents (542 cases) was related to falling and the lowest related to chemical and electrical burns with one case. Also, most complaints were related to accidents. In the present study, the rate of road accidents was higher than the street and urban accidents (8142 and 4208 cases, respectively). The most frequent accidents were related to motorcycles (748 cases) and then light vehicles (744 cases). The number of accidents that occurred in September and April is higher. Most male victims of accidents were between 16 and 20 years old.

Conclusion Since incidents related to the fall and clash with the mechanical force have the highest prevalence, it is necessary to allocate more financial and human resources to prevent such accidents. Because most admissions to emergency hospital services are related to accidents, and the rate of road accidents is high, it is essential to investigate the causes of accidents. Then, it is possible to raise public awareness to respect the safety regulations while driving and increasing the quality of roads.

Extended Abstract

1. Introduction

A

ccidents are one of the leading causes of non-communicable diseases [1, 2], which

are no longer considered as a random phenomenon but are a price that humans have to pay for the advancement of technology. Accidents, as the second leading cause of disability, can lead to physical and mental disorders and, in severe cases, even death [3]. Traffic accidents are the eighth

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leading cause of death globally, and the first leading cause of death in the age group of 15-29 years [4].

According to the World Health Organization, the number of deaths due to traffic accidents will increase by 80% from 2000 to 2020 [5]. According to studies, about 9 million accidents occur every year, and accidents are among the leading causes of hospitalization and death. According to published statistics, various injuries caused by accidents account for 3% of all visits to medical centers in Iran [6]. Every year, more than 5 million people in the world die due to injuries caused by accidents, and tens of millions of people go to emergency departments for reasons such as accidents, drownings, falls, violence, electric shocks, bites, suicides, etc. Besides hurting people's health, traffic accidents incur costs related to care and treatment and rehabilitation needs and have a psychological effect on people [7].

Vehicle accidents are considered a very serious issue and are inevitable consequences of traffic and road transport [5]. Motorcycle crashes account for a significant number of all accidents worldwide. More than 51% of traffic accidents that lead to death or hospitalization are related to motorcyclists in Iran [8, 9].

In a few studies, Pareto charts have been used to identify and prioritize problems in various contexts. Pareto chart (Pareto analysis) is a way to manage errors and shortcomings to focus on problem solving. This chart is based on the work of the 19th-century economist Wilfredo Pareto. Joseph M. Juran generalized Pareto's principle by stating that 80% of a company's problems are the result of only 20% of the

causes [10]. Pareto chart is used to identify the issues and topics that have caused the highest share of problems. The primary purpose of using a Pareto chart is to create a system that can automatically audit and modify. In this study, the frequency and causes of accidents registered in Gonabad City's Medical Emergency and Accident Management Center in 2018 based on the Pareto chart were investigated.

2. Materials and Methods

This research was a cross-sectional descriptive study in which all accidents registered in Gonabad City's Medical Emergency and Accident Management Center in 2018 were examined based on the Pareto chart. This chart represents frequency distribution for descriptive data, which are classified by groups. The horizontal axis of this chart shows the categories, and its vertical axis shows the frequency or percentage of observations of each category. This method determines the area in which the most problems (80%) are located. The Pareto chart identifies essential factors leading to a "defect" or "defect in a process" [11].

After determining the frequency of influential factors, a chart is drawn based on their frequencies and percentages of inclusion. To obtain frequencies, it is necessary to prepare an accident register form based on the required information and analyze them. Although all actions and calculations can be done manually, using the right software increases the speed and accuracy of the job. The two most widely used applications in this field are SPSS and Minitab.

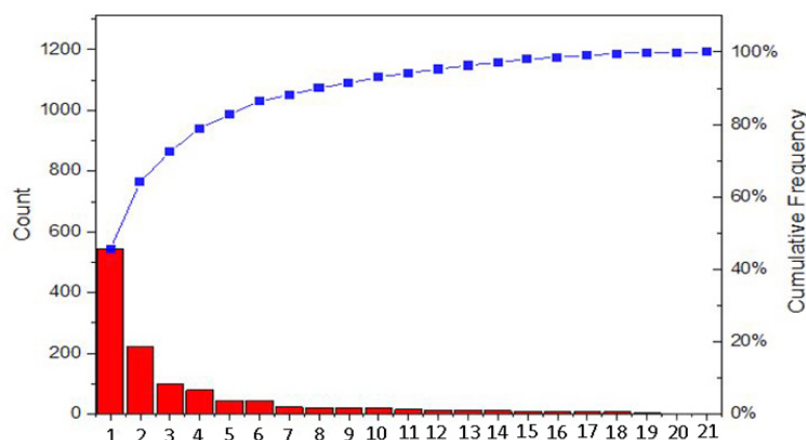
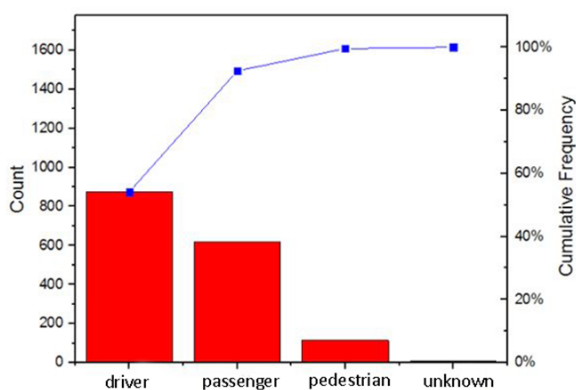


Figure 1. Results of accident investigation by the "type of accident"

1. Falls from heights; 2. Hit by mechanical force; 3. Bites with insects or reptiles; 4. Medicine poisoning; 5. Drug poisoning; 6. Violence; 7. Burns with hot liquids; 8. Common cold; 9. Animal bites; 10. CO poisoning; 11. Respiratory obstruction; 12. Electric shock; 13. Toxic poisoning; 14. Other cases; 15. Fire burns; 16. Alcohol poisoning; 17. Other burns; 18. Suicide; 19. Heatstroke; 20. Electric burns; 21. chemical burns.



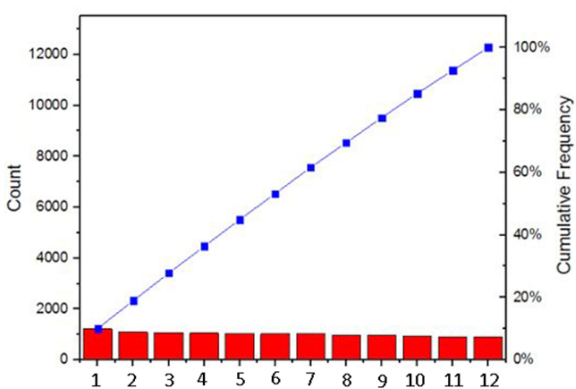
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Figure 2. Results of accident investigation by the “injured situation”

In this study, information about all accidents in 2018 was examined. These variables included the number of accidents, causes of the accidents, gender and age of victims, time of the accident, marital status, location of the accident, injured body part, drugs used in transport, and non-transport accidents. They were collected and then analyzed in Minitab16, SPSS V. 18, and EXCEL V. 2010 applications.

3. Results

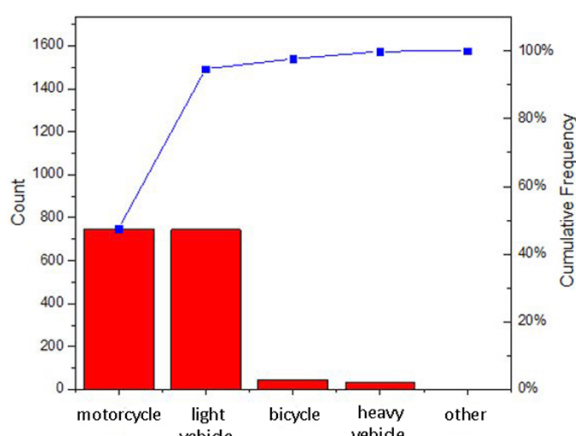
According to the present study results, a total of 12281 accidents and medical emergencies were recorded in Gonabad City in 2018, of which 4174 were urban, and 8107 were road accidents. Also, the results of accident investigation by the “type of accident” are shown in Figure 1.



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Figure 4. Results of accident investigation by the “month of the year”

1. September; 2. April; 3. November; 4. August; 5. January;
6. December; 7. June; 8. March; 9. October; 10. February; 11. July; 12. May.



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Figure 3. Results of accident investigation by the “type of vehicle”

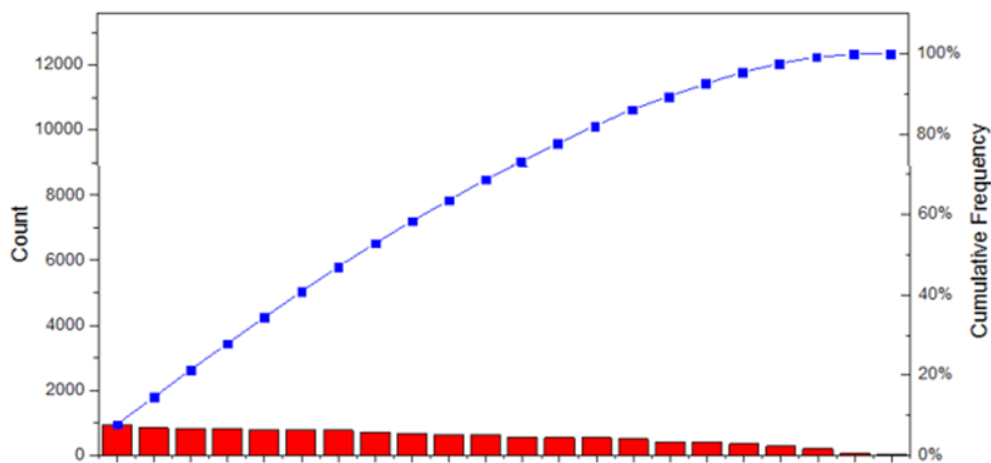
As the results show, “chemical and electrical burns” with one case had the lowest number of accidents, and “falls from heights” with 542 cases (46%) and “collision with mechanical force” with 222 cases (19%) had the highest number of accidents. The results of investigating traffic accidents by the “condition of injured person” are shown in Figure 2, and by the “vehicle type” in Figure 3.

According to Figure 4, the results showed that the highest number of accidents occurred in September and April, and the lowest number of accidents occurred in July and May. The results of the investigation of accidents by age of the injured are shown in Figure 5.

The results also showed that most people referred to the emergency medical center were related to “accident” with 1903 cases (15.5%) and then to “collision with mechanical force” with 1616 cases (13.1%). “Fire” with one case (0.008%) had the lowest number of accidents (Figure 6). Also, the number of accidents in males was higher than females (55.3% and 44.7%, respectively).

4. Discussion

According to the results of this study, more than 60% of emergencies were related to the “fall from heights” and “collisions with mechanical force”, and the least to “chemical burns and electrical burns”. Also, most of the complaints of people referring to the emergency medical centers were related to “accidents”. The results of the study of Beheshti et al. which was conducted with the same title but from 2013 to 2016, were also consistent with the results of the present study [12]. In the study of Khatibi et al. (2007), most cases were related to “traffic accidents” (42%) and the least to “electric shocks” (0.2%) [3]. Also, in Hamid Souri’s study (2001), the epidemiology of accidents



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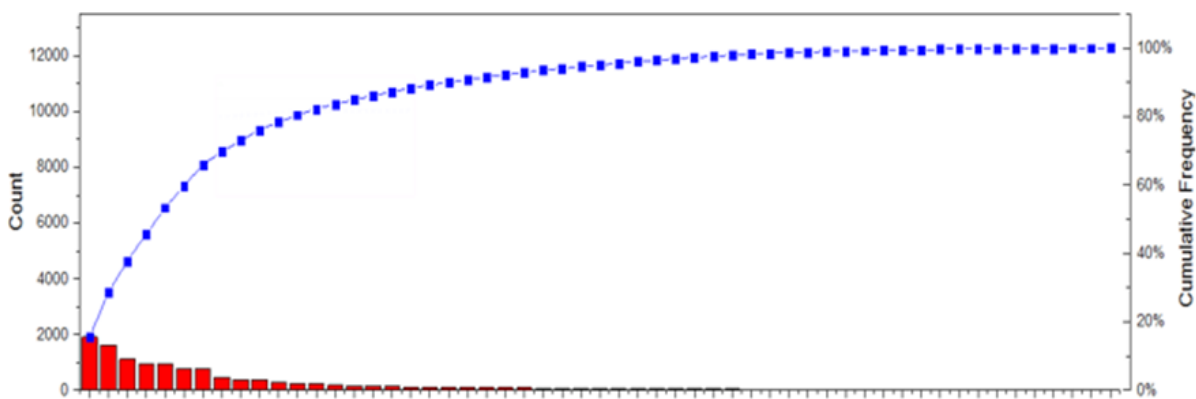
Figure 5. Results of accident investigation by the “age of the injured”

Between 16 and 20, between 26 and 30, between 31 and 35, between 46 and 50, unspecified, between 36 and 40, between 21 and 25, between 56 and 60, between 41 and 45, between 61 and 65, between 81 and 85, between 76 and 80, between 51 and 55, between 71 and 75, between 66 and 70, between 11 and 15, less than 5 years, between 86 and 90, between 6 and 10, between 91 and 95, between 95 and 100, more than 100.

in children referred to the emergency department of Ahvaz hospitals proved that “trauma caused by various objects” (37.2%), “falls from heights” (22.8%), and “traffic accidents” (10.6%) were the leading causes of the injuries [13].

In the study of Koohpaei et al. in Gonabad City (2014-2016), “traffic accidents” accounted for 17.61% and “heart accidents” for 10.92% of the total number of accidents

[14]. According to the present study results and its comparison with the results of the Koohpaei et al. study, traffic accidents have increased significantly in recent years, the essential type of which is “falls from heights”. In the study of Masoud Mohammadi et al. (2016), both men and women had the highest frequency. The percentage of accidents were as follows: “car accident” with 758 cases (30.9%),



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Figure 6. Results of accident investigation by the “type of complaint”

Accident; weakness and lethargy; other cases; heart disease; hypertension; non-accidental trauma; shortness of breath; abdominal pain; chest pain; seizure; renal colic; impaired consciousness; falls from heights; diabetes; dizziness; pregnancy problems; gastrointestinal; decreased level of consciousness; ambiguous abdominal pain; headache; childbirth; drug poisoning; scorpion bite; low back pain; trauma; head trauma; cardiopulmonary arrest; bleeding from the nose; poisoning; women’s emergency; internal; allergy; mental disorder; unspecified; burns; possibly stroke; airway obstruction; gastrointestinal bleeding; muscle cramps; hypertension; gas poisoning; bleeding; electric shock; co poisoning; toxic poisoning; asthma attack; vaginal bleeding; knife wound; shot; methadone poisoning; drug abuse; animal bites; abortion; cancer; patient death.

“violence” with 323 cases (11.9%), and “suicide” with 121 cases (10.9%) [6].

In the study of Ghahraman Mahmoudi et al. (2013), most deaths were related to “road accidents”, and after “traffic accidents”, the “falls from heights” had the highest rate of injury, which is consistent with the results of the present study [7]. In the study of Ahmadpour et al. (2009) in Qazvin City, Iran, the highest rate of accidents was related to traffic accidents (38.1%), and the lowest rate to suicide (0.8%) [15]. All of the above study results are consistent with the present study results, which accounted for the highest rate of traffic accidents.

In the present study, drivers accounted for 55%, occupants 40%, and pedestrians 8% of the victims of accidents. In the study of Seyed Saeed Hashemi Nazari et al. (2012), the situation of people who died during the accident showed that the incidence of deaths were as follows: pedestrians 324 cases (24.36%), passengers 419 cases (31.5%), drivers 569 cases (42.78%), and unknown 18 cases (1.35%) [16]. Also, in the study of Payman Asadi et al. the most injured in traffic accidents were motorcyclists and car occupants [17]. In the study of Seyed Saeed Hashemi Nazari et al. (2012), the results showed that the incidence of mortality in drivers (42.78%) is the highest [16]. The results of all these studies confirm the results of the present study in the sense that drivers have the highest number of injured.

The highest rate of accidents is related to motorcycles (more than 45%), and then light vehicles (more than 45%), which is consistent with the study results of Payman Asadi and associates. Also, in the study of Seyed Saeed Hashemi Nazari et al. 47.9% of the deceased used cars and vans, 43.6% motorcycles and bicycles, and 8.5% heavy vehicles [16]. Kazem Alizadeh Barzian, in his study, showed that out of 55108 accidents resulting in injuries in Behbahan City, Iran, 48.5% are related to traffic accidents, the highest of which is related to motorcyclists (58.8%) [18].

Teaching traffic rules through public media has a significant role in increasing public awareness. Awareness of people about the importance of observing safety regulations while driving and improving the quality of streets effectively reduces accidents. In the present study, the rate of road accidents was higher than the street (urban) accidents (65% and 35%, respectively). This finding could be due to non-compliance with the speed limit on suburban roads, lack of warning signs in accident hotspots, insufficient rest before driving, continuous driving over long distances, etc. The number of accidents can be reduced by educating preventive measures, paying more attention to road safety, and increasing police control.

In the study of traffic accidents in Ethiopia (2008), the main factors influencing the number, causes, and possible interventions of accidents were poor road network, lack of awareness about road traffic safety, mixed traffic flow system, lack of rules to put pressure on drivers, unsuitable vehicle conditions, poor emergency medical services, and the absence of compulsory insurance law on traffic accidents [19]. Also, in the study of Ansari et al. (2000), the results showed that more than 65% of accidents were due to vehicles traveling too fast or drivers disobeying traffic signs [20]. In Ahmadpour’s study, the number of accidents on suburban and urban roads was equal (18%), which was mainly related to automobiles (20.6%) [15]. In Asadi’s study, most accidents (53.1%) were on suburban roads [17].

In the present study, the number of accidents that occurred in September and April was the highest. In Hashemi Nazari’s study (2012), a total of 34.43% of deaths due to traffic accidents occurred in summer, 26.69% in spring, 23.23% in autumn, and 15.64% in winter, and the highest incidence and frequency of death was observed in July [16]. In the study of Khatibi and Zarei, the most accidents occurred in summer, September [3, 21], and in the study of Koohpaei et al. between 2014 and 2016, the highest accident rate was in spring [14]. Also, in Asadi’s research, most accidents were in summer [17]. All these studies are consistent with the present study, which could be due to holidays and increased travel in this season.

In the present study, the age group of 16 to 20 years had the highest rate of accidents, and the number of accidents was higher in men than women. According to the study of Khatibi et al. 73.7% of the accidents were related to men and 26.3% to women. Also, most of the accidents were related to 15 to 20 years old people [3]. According to Koohpaei et al.’s study, between 2014 and 2016, the highest accident rate was in the ages of 0 to 10 years [14]. Based on Zarei et al. study, the highest number of accidents (60.93%) was related to men [21], all of which are similar to the present study results.

5. Conclusion

In this study, all accidents in 2018 were reviewed, and the existing data reference was valid, which is one of the strong points of this study and can help city managers for future planning to prevent accidents. However, due to the lack of complete records of some accidents, further studies can be done in this area. The results of the present study showed that “traffic accidents” and “falls from heights” are the most important emergencies that harm society. By focusing and assigning priorities on controlling these ac-

idents, health and safety policymakers can reduce a large portion of society's accidents.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of the Gonabad University of Medical Sciences (Code: IR.GMU.REC.1398.008).

Funding

This study has been registered as a Research Project (Ethics Code: IR.GMU.REC.1398.008) in Gonabad University of Medical Sciences, Vice-Chancellor for Research.

Authors' contributions

Supervision: Mohammad Hossein Beheshti, Mojtaba Emkani, Amin Zamani, Akram Tabrizi and Mostafa Jafari; Conceptualization: Mohammad Hossein Beheshti and Mostafa Jafari; Data analysis: Mohammad Hossein Beheshti, Akram Tabrizi and Mostafa Jafari; Writing – original draft: Mohammad Hossein Beheshti, Mojtaba Emkani and Amin Zamani, Mostafa Jafari, and Akram Tabrizi; Data collection: Amin Zamani; Methodology: Mojtaba Emkani.

Conflicts of interest

The authors declared no conflict of interest.

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بررسی فراوانی و علل انواع حوادث ثبت شده در مرکز مدیریت حوادث و فوریت‌های پزشکی شهرستان گناباد بر اساس نمودار پارتو در سال ۱۳۹۷

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چکیده

اهداف: سوانح و حوادث جزء علل اصلی بستری شدن و مرگ به شمار می‌روند. این مطالعه به بررسی شیوع و علل انواع حوادث ثبت شده در مرکز مدیریت حوادث و فوریت‌های پزشکی شهرستان گناباد در سال ۱۳۹۷ با استفاده از نمودار پارتو پرداخته است.

مواد و روش‌ها: این پژوهش یک مطالعه مقطعی توصیفی است و در آن اطلاعات مربوط به ۱۲۲۸۱ حادثه ثبت شده در سال ۱۳۹۷ بررسی شد و متغیرهای مورد نیاز از قبیل تعداد حادثه، علل حادثه، سن، جنس و زمان حادثه به تفکیک حوادث مرتبط با حمل و نقل و حوادث غیرمرتبط با حمل و نقل جمع‌آوری شد و در نهایت با استفاده از نمودار پارتو و به کمک نرم‌افزار مینی‌تب نسخه ۱۶، SPSS نسخه ۱۸ و EXCEL 2010 مورد آنالیز قرار گرفت.

یافته‌ها: با توجه به نتایج، بالاترین نرخ حوادث مربوط به سقوط (۵۴۲ مورد، ۴۶ درصد) و کمترین آن مربوط به حوادث سوختگی شیمیایی و سوختگی الکتریکی با یک مورد حادثه است. بیشترین شکایت افراد مراجعه‌کننده مربوط به تصادف است (۱۵/۵ درصد). در مطالعه حاضر نرخ حوادث جاده‌ای بیشتر از حوادث درون‌شهری است (به ترتیب ۸۱۴۲ و ۶۶ درصد) و ۴۲۰۸ مورد "۳۳ درصد"، بیشترین میزان حوادث مربوط به موتور سیکلت (۷۴۸ مورد "۴۷ درصد") و خودروی سبک (۷۴۴ مورد "۴۷ درصد") است و تعداد حوادث رخ داده در ماه شهریور و فروردین بیشتر است. بیشترین حوادث در سن ۱۶ تا ۲۰ سال و در افراد مذکر است.

نتیجه‌گیری: از آنجا که حوادث مربوط به سقوط و برخورد با نیروی مکانیکی بیشترین میزان شیوع را دارد، بایستی در جهت پیشگیری از این قبیل حوادث و بررسی علل ایجاد آن‌ها منابع مالی و انسانی بیشتری تخصیص یابد و با توجه به اینکه بیشترین شکایت افراد مراجعه‌کننده به مرکز فوریت پزشکی تصادف است و نرخ حوادث جاده‌ای بیشتر است، توسعه آگاهی مردم نسبت به رعایت اصول ایمنی در هنگام رانندگی و افزایش ضریب ایمنی جاده‌ها ضروری است.

تاریخ دریافت: ۲۲ بهمن ۱۳۹۸

تاریخ پذیرش: ۳۱ تیر ۱۳۹۹

تاریخ انتشار: ۱۲ دی ۱۳۹۹

کلیدواژه‌ها:

نمودار پارتو، مرکز فوریت پزشکی، حوادث

مقدمه

۱۵-۲۹ است [۴]. طبق گزارش سازمان جهانی بهداشت، میزان مرگ‌ومیر به دلیل سوانح ترافیکی از سال ۲۰۰۰ تا ۲۰۲۰، ۸۰ درصد افزایش خواهد یافت [۵]. بر اساس مطالعات حدود ۸ میلیون سانحه در هر سال در کشور رخ می‌دهد و سوانح و حوادث جزو علل اصلی بستری شدن و مرگ به شمار می‌روند. در ایران و بر اساس آمارهای منتشر شده آسیب‌های مختلف ناشی از حوادث و سوانح ۳ درصد تمام مراجعه‌ها به مراکز درمانی را تشکیل می‌دهند [۶]. هر ساله بیش از پنج میلیون نفر در دنیا به دلیل صدمات ناشی از حوادث می‌میرند و ده‌ها میلیون نفر در نتیجه حوادثی مانند تصادف، غرق‌شدگی، سقوط، خشونت،

حوادث یکی از اساسی‌ترین همه‌گیری‌های بیماری‌های غیرواگیر را تشکیل می‌دهند [۲، ۱۰] که امروزه دیگر به عنوان رویدادی اتفاقی یا تصادفی در نظر گرفته نمی‌شوند و قسمتی از بهایی هستند که انسان به جهت پیشرفت و توسعه تکنولوژی و فناوری می‌پردازد. حوادث به عنوان دومین علت معلولیت‌ها یکی از شرایطی است که می‌تواند به اختلالات جسمانی و روانی و در موارد شدید به مرگ منجر شود [۳]. حوادث ترافیکی هشتمین علت منجر به مرگ در جهان و اولین علت مرگ در گروه سنی

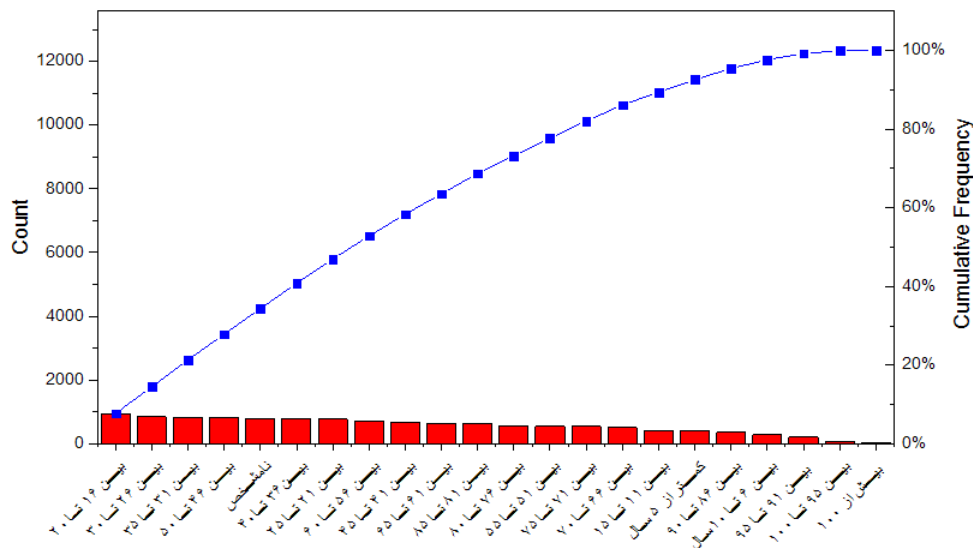
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نشانی: تهران، دانشگاه علوم پزشکی تهران، دانشکده بهداشت، گروه مهندسی بهداشت حرفه‌ای.

تلفن: ۷۳۵۷۴۴۵ (۹۱۵) ۹۸+

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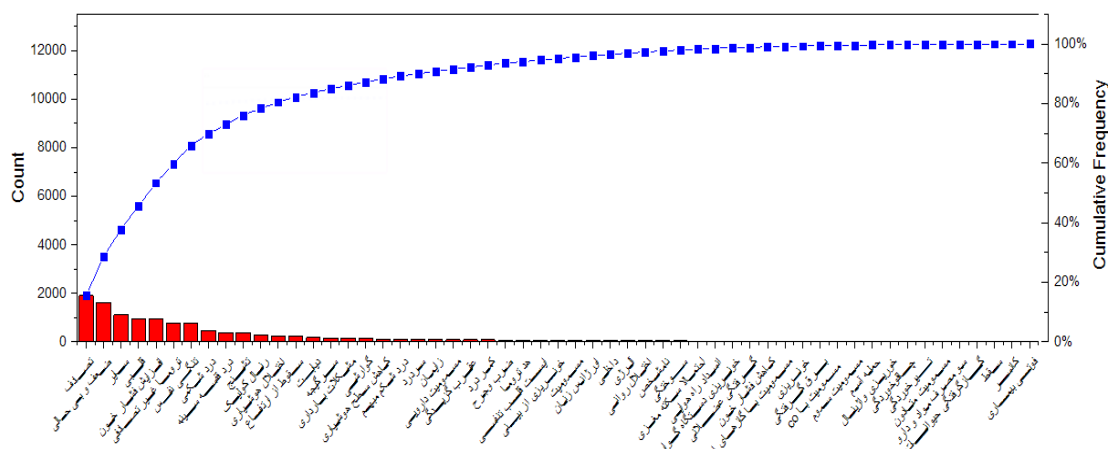
افتخ دانش

تصویر ۵. نتایج بررسی حوادث به تفکیک سن مصدوم

درصد) و سپس خودروی سبک (بیش از ۴۵ درصد) است که با نتایج مطالعه اسدی و همکاران مطابقت دارد. همچنین در مطالعه هاشمی نظری و همکاران خودروی مورد استفاده در ۴۷/۹ درصد از متوفیان سواری و وانت بار، ۴۳/۶ درصد موتورسیکلت و دوچرخه و ۸/۵ درصد وسایل نقلیه سنگین بوده است [۱۶]. علی زاده برزیان نیز در مطالعه خود نشان داد که در مجموع ۵۵۱۰۸ مورد حادثه منجر به جرح در شهرستان بهبهان، ۴۸/۵ درصد مربوط به حوادث ترافیکی است که بالاترین آن مربوط به موتورسواران با ۵۸/۸ درصد بود [۱۸]. آموزش قوانین راهنمایی و رانندگی از طریق رسانه‌های عمومی نقش بسزایی در افزایش آگاهی مردم دارد و آگاهی مردم از اهمیت رعایت اصول ایمنی در هنگام رانندگی و افزایش ضریب ایمنی خیابان‌ها در کاهش تعداد حوادث مؤثر است. در مطالعه حاضر نرخ حوادث جاده‌ای بیشتر از حوادث درون‌شهری بوده است (به ترتیب ۶۵ و ۳۵ درصد) که می‌تواند به دلیل عدم رعایت سرعت مجاز در جاده‌های برون‌شهری، نبود علائم هشداردهنده در

درصد، سرنشین ۴۰ درصد و عابر پیاده ۸ درصد آمار مصدومین را تشکیل می‌دهند. در مطالعه هاشمی نظری و همکاران در سال ۱۳۹۱ بررسی وضعیت افراد فوت‌شده حین تصادف نشان داد که میزان وقوع مرگومیر در عابرین ۳۲۴ مورد (۲۴/۳۶ درصد)، سرنشینان ۴۱۹ مورد (۳۱/۵ درصد)، رانندگان ۵۶۹ مورد (۴۲/۷۸ درصد) و موارد نامعلوم ۱۸ مورد (۱/۳۵ درصد) بوده است [۱۶]. همچنین در مطالعه پیمان اسدی و همکاران بیشترین وضعیت مصدومین حوادث رانندگی را موتورسیکلت‌سواران و سرنشینان خودرو تشکیل داده‌اند [۱۷]. در مطالعه هاشمی نظری و همکاران در سال ۱۳۹۱ نتایج نشان داد میزان وقوع مرگومیر در رانندگان (۴۲/۷۸ درصد)، بالاترین مقدار است [۱۶] که همگی این مطالعات نتایج مطالعه حاضر را که در آن راننده بالاترین آمار را در میان وضعیت مصدومین دارد، تأیید می‌کنند.

بیشترین میزان حوادث مربوط به موتور سیکلت (بیش از ۴۵



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تصویر ۶. نتایج بررسی حوادث به تفکیک نوع شکایت افراد

و مرجع داده‌های موجود معتبر هستند جزو نقاط قوت مطالعه است که می‌تواند به مدیران شهری برای برنامه‌ریزی‌های آینده در جهت پیشگیری از حوادث کمک کنند، ولی با وجود این، به دلیل عدم ثبت گزارش کامل برخی حوادث، مطالعات بیشتری می‌تواند در این زمینه صورت گیرد. نتایج مطالعه حاضر نشان داد حوادث ترافیکی و سقوط از ارتفاع مهم‌ترین حوادثی هستند که منجر به آسیب به جامعه می‌شوند و با تمرکز و تخصیص اولویت‌ها بر کنترل این حوادث توسط سیاست‌گذاران حوزه ایمنی و بهداشت می‌توان بخش زیادی از حوادث جامعه را کنترل کرد.

ملاحظات اخلاقی

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حامی مالی

حامی مالی این پژوهش معاونت پژوهشی دانشگاه علوم پزشکی گناباد بوده است.

مشارکت نویسندگان

تأیید نسخه نهایی: محمدحسین بهشتی، مجتبی امکانی، امین زمانی، اکرم تبریزی و مصطفی جعفری زاوه؛ ارائه ایده پژوهشی: محمدحسین بهشتی و مصطفی جعفری زاوه؛ آنالیز داده‌ها: محمدحسین بهشتی، اکرم تبریزی و مصطفی جعفری زاوه؛ بازبینی اولیه: محمدحسین بهشتی، مجتبی امکانی و امین زمانی؛ نوشتن نسخه مقاله: مصطفی جعفری زاوه و اکرم تبریزی؛ جمع‌آوری داده‌ها: امین زمانی؛ طراحی مطالعه: مجتبی امکانی.

تعارض منافع

بنابر اظهار هیچ‌گونه تعارض منافع توسط نویسندگان بیان نشده است.

تشکر و قدردانی

نویسندگان مراتب تشکر و قدردانی خود را از معاونت پژوهشی دانشگاه علوم پزشکی گناباد ابراز می‌دارند.

نقاط حادثه‌خیز، عدم استراحت کافی قبل از رانندگی و رانندگی مداوم در مسافت‌های طولانی و غیره باشد که با آموزش اقدامات پیشگیرانه و توجه مسئولین در ایمن کردن جاده‌ها و نظارت و کنترل بیشتر پلیس می‌تواند تعداد حوادث کاهش یابد. چنان‌که در مطالعه «حوادث رانندگی در اتیوپی؛ تعداد، علل و مداخلات احتمالی» در سال ۲۰۰۸ نیز شبکه جاده‌های فقیر، عدم آگاهی در مورد ایمنی ترافیک جاده‌ای، سیستم جریان ترافیک مختلط، ضعف قانون و عدم اعمال فشار، شرایط نامناسب وسایل نقلیه، خدمات پزشکی اورژانسی ضعیف و عدم وجود قانون بیمه اجباری در مورد تصادفات رانندگی به عنوان عوامل اصلی مشکل شناخته شده‌اند [۱۹]. همچنین در مطالعه انصاری و همکاران در سال ۲۰۰۰ نتایج نشان داد بیش از ۶۵ درصد تصادفات به دلیل این است که وسایل نقلیه با سرعت بیش از حد تردد می‌کنند یا رانندگان به علائم‌های راهنمایی و رانندگی بی‌توجهی می‌کنند [۲۰]. در مطالعه احمدپور درباره تصادفات، تصادف در جاده‌های برون‌شهری و درون‌شهری برابر است (۱۸ درصد) که بیشتر با اتومبیل‌های سواری (۲۰/۶ درصد) است [۱۵]. در مطالعه اسدی نیز بیشترین تصادفات در جاده‌های برون‌شهری (۵۳/۱ درصد) بوده است [۱۷].

در مطالعه حاضر تعداد حوادث رخ داده در ماه شهریور و فروردین از همه بیشتر است. در مطالعه هاشمی نظری در سال ۱۳۹۱، ۳۴/۴۳ درصد از مرگ‌ومیر ناشی از حوادث ترافیکی در فصل تابستان، ۲۶/۶۹ درصد در فصل بهار، ۲۳/۲۳ درصد در فصل پاییز و ۱۵/۶۴ درصد در فصل زمستان اتفاق افتاده بود و بالاترین میزان بروز و فراوانی مرگ در تیر ماه مشاهده شد [۱۶]. در مطالعه خطیبی و زارعی بیشتر حوادث در فصل تابستان و ماه شهریور [۲۱، ۳] و در مطالعه کوهپایی و همکاران در سال ۲۰۱۴ تا ۲۰۱۶ بر اساس نتایج، بالاترین نرخ حوادث در فصل بهار رخ داده است [۱۴]. همچنین در مطالعه اسدی بیشترین فصل تصادف مربوط به تابستان بوده است [۱۷]. همگی مطالعات انجام‌شده با مطالعه حاضر تطابق دارند که این امر می‌تواند به دلیل تعطیلات در این ایام و افزایش میزان مسافرت‌ها باشد. در مطالعه حاضر گروه سنی ۱۶ تا ۲۰ سال بیشترین میزان حوادث را داشتند و تعداد حوادث در مردان بیشتر از زنان بود. بر اساس نتایج مطالعه خطیبی و همکاران در سال ۱۳۸۶ از کل حوادث مورد مطالعه ۷۳/۷ درصد مربوط به مردان و ۲۶/۳ درصد مربوط به زنان بود. همچنین بیشترین موارد حادثه در سن ۱۵ تا ۲۰ سال بوده است [۲]. بر اساس نتایج کوهپایی و همکاران در سال ۲۰۱۴ تا ۲۰۱۶ بالاترین نرخ حوادث در سنین صفر تا ۱۰ سال بود [۱۴]. بر اساس نتایج مطالعه زارعی و همکاران در سال بیشترین تعداد حوادث مربوط به مردان بود (۶۰/۹۳ درصد) [۲۱] که همگی مشابه نتایج مطالعه حاضر هستند.

نتیجه‌گیری

اینکه در این مطالعه کلیه حوادث سال ۱۳۹۷ بررسی شده‌اند

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