JEMTAC
Journal of Emergency Medicine Trauma & Acute Care
A PEER REVIEWED JOURNAL

OPEN ACCESS

Research paper

Years of Life Lost due to accidents and injuries in Iran: A trend of five years (2014–2018)

Alireza Heidari[1], Mohammad Javad Kabir[1], Zahra Khatirnamani[1,*], Nahid Jafari[1], Masoumeh Gholami[1], Mohammad Reza Honarvar[1], Mansoureh Lotfi[1]

[1]Health Management and Social Development Research Center, Golestan University of Medical Sciences, Gorgan, Iran

*Email: khatirzahra@gmail.com

ABSTRACT

Background: Accidents and injuries are known around the world as the leading cause of disability and mortality.

Objective: This study aimed to investigate the epidemiology of deaths due to accidents and injuries and years of life lost due to it.

Methods: The method used in this research is the documentary method analysis. The study population was all deaths recorded in the Statistics and Performance Analysis Unit of Golestan University of Medical Sciences during the years 2014–2018.

Results: During the years 2014 to 2018, more than 4318 deaths due to accidents occurred in Golestan province, of which 76.3% were related to men and 23.7% were related to women. There were about 99,531 years of life lost due to premature death during the study period, with the proportion of men (75,737 years, 16 per 1,000) higher than women (23,794 years, 5.1 per 1,000).

Conclusion: Promoting knowledge and education, especially in the younger age group, interventions to solve accident-prone areas, adopting policies to reduce traffic accidents and lack of easy access to pesticides, teaching safety principles are also recommended.

Keywords: trauma, epidemiology, accident, injury, years of life lost

http://doi.org/10.5339/jemtac.2022.2

Submitted: 21 July 2021
Accepted: 24 November 2021

QSCIENCE
HAMAD BIN KHALIFA UNIVERSITY PRESS

Cite this article as: Heidari A, Kabir MJ, Khatirnamani Z, Jafari N, Gholami M, Honarvar MR, Lotfi M. Years of Life Lost due to accidents and injuries in Iran: A trend of five years (2014–2018), *Journal of Emergency Medicine, Trauma & Acute Care, Qatar Health Care Conference* **2022(2):2** http://doi.org/10.5339/jemtac.2022.2

INTRODUCTION

Today, accidents are a pervasive problem not only on the road but also at home, school, leisure centers, sports fields, and workshops and are one of the major problems of industrialized and developing countries[1] and it can cause irreparable damage, impose heavy costs and deplete the power of various forces, including law enforcement, judicial authorities, medical centers, and forensic medicine.[2] According to the World Health Organization (WHO), an accident is an event that causes detectable damage and is defined as an injury or damage to the structure or function of the body by an external agent or force that may be physical or chemical and includes intentional accidents and is unintentional.[3]

Accidents are known around the world as the leading cause of disability and mortality and are a public health problem in developing and developed countries[4] so that it is the third leading cause of death after cardiovascular disease and cancer in the world[5], which is daily they cause about 16 thousand and more than 5 million deaths in the world annually. In Iran, the incidence of death due to injuries caused by accidents is about 62 per hundred thousand people.[6,7] According to the WHO in 2010, accidents, regardless of gender, are the second leading cause of death in Iran.[8] Trauma is the most common cause of death in the first three decades of life. Reports released by the WHO's Eastern Mediterranean Office show that despite problems such as infectious diseases and malnutrition, accidents and injuries are currently the most important issues and the leading causes of death in communities.[9]

Accidents in Iran, as the first health problem, waste one million and two hundred thousand years of life annually due to disability or premature death.[10] With a better understanding of the epidemiology of accidents, appropriate programs and strategies can be used, including preventive measures and organizing the provision of health services. This will lead to an improved and better quality of relevant monitoring. On the other hand, the need to prevent accidents in any society requires useful and purposeful information. This study aimed to investigate the epidemiology of death due to accidents and Years of Life Lost (YLL) in Golestan province during the years 2014–2018.

METHODS

The documentary research method (secondary analysis) was used, and data were collected from clinical records. The population consisted of all deaths registered in the health department of Golestan University of Medical Sciences (GOUMS) over the period 2014–2018. Mortality information was obtained from the Statistics and Performance Analysis Unit of GOUMS in the form of an Excel file. In addition to the cause of death, this file also provided information about the demographic characteristics (age, sex) of the deceased.

Deaths records contain information about the number and cause of death from cities affiliated with GOUMS and from various sources such as rural health centers and health houses, urban health centers, hospitals, and maternity wards, sanitariums, mortuaries, forensic departments, and other sources. Since multiple sources have been used to gather information, duplicates have been removed from the list. These records are regularly compared to the information from the National Organization for Civil Registration, and discrepancies are identified and followed up. In the present research, ICD-10 was used for disease classification and coding the cause of death. Then, to qualitatively examine the death cause, the data were examined and modified in terms of causes of death that are inconsistent with sex and age, trivial conditions, and codes for ill-defined and unknown causes of death. Global Burden of Disease (GBD) 2010 and 2013 studies was used to modify the codes of inconsistent and trivial causes of death. As for ill-defined and unknown causes of death, it was assumed that each code, at any age and sex, contains the cause of death that follows the distribution of causes of death within that age and sex group.

After qualitative correction of the data, the population of the research—i.e., the total number of deaths—was extracted for the period 2014–2018. The total population of Golestan Province as per the population and housing census was 1,777,014 and 1,868,819 people in 2011 and 2016, respectively. Population growth rate and population information by sex and age group were used to calculate population estimates for years between censuses. The following equation was used to estimate population size:

$$P_{t+n} = P_t(1 + r)^n$$

where P_{t+n} is population size in the second census, P_t is population size in the first census, n is the difference between the two censuses, and r is the annual population growth rate.

In this study, the methodology used in GBD 2002 was used to maintain comparability[11], and the standard expected years of life lost (SEYLL) was adopted to calculate years of life lost (YLL). This measure uses the expectation of life at each age based on an ideal standard derived from a model life table to estimate YLL associated with death.[12] The difference in survival between men and women was set at 2.5 years, and the Coale and Demeny regional model life tables (Family Model West, level 26) for men and women were used to determine life expectancy in different age groups. These were calculated with the following formula using age and sex patterns from the original GBD Project in the Excel format as well as the weighting scheme from GBD 2000, which are consistent with the views of Iranian experts[12,13]:

$$YLL = N\frac{Ce^{(ra)}}{(\beta+r)^2\left[e^{-(\beta+r)(L+a)}\left[-(\beta+r)(L+a)\right] - e^{-(\beta+r)a}\left[-(\beta+r)a-1\right]\right]}$$

where:

N = Number of deaths for a given age and sex;

L = Standard life expectancy for the same age and sex;

r = Discount rate (GBD standard value is 0.03);

β = Age-weighting function (GBD standard value is 0.04);

C = Age-weighting correction constant (GBD standard value is 0.1658).

After modifying and cleaning the data, WinPepi 11.65 was used to calculate the rates, and Microsoft Excel 2016 was used for frequency distributions and line graphs.

RESULTS

During the years 2014–2018, 42,261 deaths occurred for various reasons in Golestan province, of which 4318 deaths were due to trauma. The mean age of the deceased was 36.27 ± 20.85 years (36.26 ± 19.93 years in men and 36.34 ± 23.58 years in women). Among trauma cases, 3295 (76.3%) were men, and 1023 (23.7%) were women.

The frequency and percentage of total cases of accidents and incidents by gender in Golestan province during the years 2014–2018 are present in Table 1. Most of the deaths were due to accidents in 2017 (985 cases). The highest and lowest deaths due to accidents in all study years were related to traffic accidents (52.1%), and accidents with unknown intentions (4.5%), respectively. The number of deaths due to suicide was higher in men than women (270 and 194 cases, respectively). The number of deaths due to Violence was also almost four times higher in men than in women (313 and 81; respectively).

Comparison of the time trend of accidents during these 5 years shows that the number of accidents in women and men and in general has been increasing, although it has decreased slightly between 2015 to 2016 and 2017 to 2018 (Figure 1).

Table 1. Frequency (%) of accidents and incidents by gender during 2014–2018, Golestan, Iran.

Year	Gender	Traffic injuries	Unintentional injuries	Suicide	Violence	Incidents with unknown intentions	Total
2014	Males	325(54.6)	173(29.1)	48(8.1)	33(5.5)	16(2.7)	595(100)
	Females	89(44.7)	71(35.7)	29(14.6)	5(2.5)	5(2.5)	199(100)
	Both	414(52.1)	244(30.7)	77(9.7)	38(4.8)	21(2.6)	794(100)
2015	Males	347(53.9)	175(27.2)	45(7.0)	27(4.2)	50(7.8)	644(100)
	Females	76(37.3)	69(33.8)	42(20.6)	6(2.9)	11(5.4)	204(100)
	Both	423(49.9)	244(28.8)	87(10.3)	33(3.9)	61(7.2)	848(100)
2016	Males	348(56.8)	137(22.3)	41(6.7)	61(10.0)	14(7.3)	613(100)
	Females	81(42.2)	44(22.9)	35(18.2)	18(9.4)	14(7.3)	192(100)
	Both	429(53.3)	181(22.5)	76(9.4)	79(9.8)	40(5.0)	805(100)
2017	Males	399(53.3)	153(20.4)	73(9.7)	95(12.7)	29(3.9)	749(100)
	Females	112(47.5)	37(15.7)	53(22.5)	26(11.0)	8(3.4)	236(100)
	Both	511(51.9)	190(19.3)	126(12.8)	121(12.3)	37(3.8)	985(100)
2018	Males	396(57.1)	110(15.9)	63(9.1)	97(14.0)	28(4.0)	694(100)
	Females	76(39.6)	49(25.5)	35(18.2)	26(13.5)	6(3.1)	192(100)
	Both	472(53.3)	159(17.9)	98(11.1)	123(13.9)	34(3.8)	886(100)
Total	Males	1815(55.1)	748(22.7)	270(8.2)	313(9.5)	149(4.5)	3295(100)
	Females	434(42.4)	270(26.4)	194(19.0)	81(7.9)	44(4.3)	1023(100)
	Both	2249(52.1)	1018(23.6)	464(10.7)	394(9.1)	193(4.5)	4318(100)

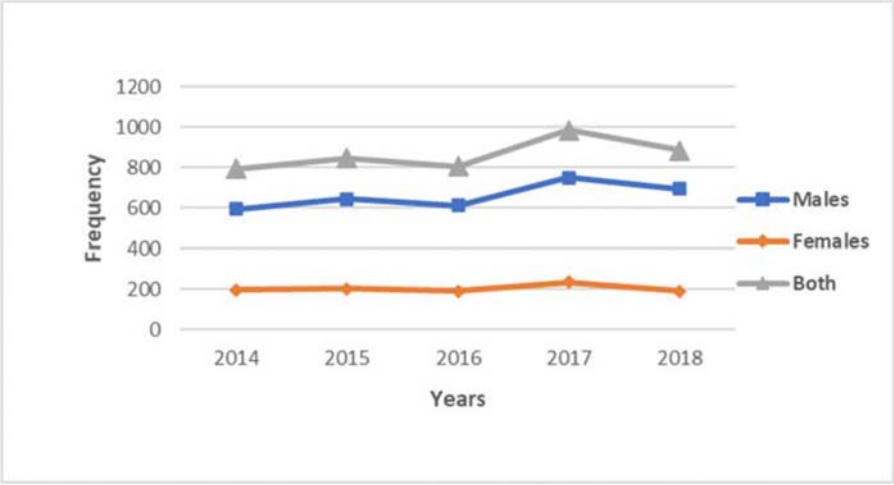

Figure 1. Frequency distribution of accidents by gender during the years 2014–2018, Golestan, Iran.

During the study period, the trend of deaths due to traffic accidents, accidents with unknown intentions, suicide, and violence increased, and unintentional accidents decreased. The highest percentage of deaths due to traffic accidents, suicide, violence, and accidents with unknown intentions belong to the age group of 15–29 years, and unintentional accidents belong to the age group of 29–15 years and 44–30 years (Table 2).

The frequency and percentage of accidents in general and by gender and age group in Golestan province during the years 2014–2018 are presented in Table 3. According to age groups, in these

Table 2. Frequency (%) of accidents and incidents by age group and cause of the accident, Golestan, Iran.

	Age group							
Cause of accident	0–4	5–14	15–29	30–44	45–59	60–69	70–79	≥ 80
Traffic injuries	106(4.7)	138(6.1)	752(33.4)	501(22.3)	382(17.0)	190(8.4)	104(4.6)	76(3.4)
Unintentional injuries	114(11.3)	68(6.7)	233(23.0)	239(23.6)	164(16.2)	70(6.9)	67(6.6)	57(5.6)
Suicide	0(0.0)	7(1.5)	231(49.8)	149(32.1)	52(11.2)	15(3.2)	5(1.1)	5(1.1)
Violence	14(3.6)	14(3.6)	127(32.2)	110(27.9)	80(20.3)	31(7.9)	13(3.3)	5(1.3)
Incidents with unknown intentions	18(9.3)	9(4.7)	63(32.6)	43(22.3)	23(11.9)	16(8.3)	11(5.7)	10(5.2)

Table 3. Frequency (%) of accidents and incidents by age group during 2014–2018, Golestan, Iran.

		Age group								
Year	Gender	0–4	5–14	15–29	30–44	45–59	60–69	70–79	≥ 80	Total
2014	Males	29(4.9)	29(4.9)	202(33.9)	150(25.2)	93(15.6)	37(6.2)	26(4.4)	24(4.0)	595(100)
	Females	28(14.1)	13(6.5)	49(24.6)	38(19.1)	28(14.1)	20(10.1)	10(5.0)	12(6.0)	199(100)
	Both	57(7.2)	42(5.3)	251(31.9)	188(23.9)	121(15.4)	57(7.2)	36(4.6)	36(4.6)	788(100)
2015	Males	18(2.8)	29(4.5)	242(37.6)	132(20.5)	112(17.4)	54(8.4)	35(5.4)	22(3.4)	644(100)
	Females	17(8.3)	10(4.9)	55(27.0)	36(17.6)	33(16.2)	30(14.7)	12(5.9)	11(5.4)	204(100)
	Both	35(4.1)	39(4.6)	297(35.0)	168(19.8)	145(17.1)	84(9.9)	47(5.5)	33(3.9)	848(100)
2016	Males	27(4.4)	30(4.9)	223(36.4)	152(24.8)	100(16.3)	43(7.0)	22(3.6)	16(2.6)	613(100)
	Females	23(12.0)	11(5.7)	53(27.6)	45(23.4)	30(15.6)	16(8.3)	10(5.2)	4(2.1)	192(100)
	Both	50(6.2)	41(5.1)	276(34.3)	197(24.5)	130(16.1)	59(7.3)	32(4.0)	20(2.5)	805(100)
2017	Males	29(3.9)	45(6.0)	240(32.0)	221(29.5)	127(17.0)	36(4.8)	30(4.0)	21(2.8)	749(100)
	Females	28(11.9)	24(10.2)	65(27.5)	54(22.9)	34(14.4)	14(5.9)	13(5.5)	4(1.7)	236(100)
	Both	57(5.8)	69(7.0)	305(31.0)	275(27.9)	161(16.3)	50(5.1)	43(4.4)	25(2.5)	985(100)
2018	Males	37(5.3)	33(4.8)	228(32.9)	177(25.5)	115(16.6)	51(7.3)	31(4.5)	22(3.2)	694(100)
	Females	16(8.3)	12(6.3)	49(25.5)	37(19.3)	29(15.1)	21(10.9)	11(5.7)	17(8.9)	192(100)
	Both	53(6.0)	45(5.1)	277(31.3)	214(24.2)	144(16.2)	72(8.1)	42(4.7)	39(4.4)	886(100)
Total	Males	140(4.3)	166(5.0)	1135(34.4)	832(25.3)	547(16.6)	221(6.7)	144(4.4)	105(3.2)	3295(100)
	Females	112(10.9)	70(6.8)	271(26.5)	210(20.5)	154(15.1)	101(9.9)	56(5.5)	48(4.7)	1023(100)
	Both	252(5.8)	236(5.5)	1406(32.6)	1042(24.2)	701(16.3)	322(7.5)	200(4.6)	153(3.5)	4318(100)

Table 4. YLL caused by accidents by age groups and sex during 2014–2018, Golestan, Iran.

Year	Gender		Age group								
			0–4	5–14	15–29	30–44	45–59	60–69	70–79	≥ 80	Total
2014	Males	YLLs	1025	849	5611	3716	1837	503	246	116	13903
		YLL/1000	11.6	5.8	19.2	17.9	15.5	15.4	12.5	15.1	15.2
	Females	YLLs	943	387	1443	991	602	316	103	67	4851
		YLL/1000	11.1	2.7	4.9	4.7	5.0	8.3	5.3	8.8	5.3
2015	Males	YLLs	543	844	6655	3231	2451	754	313	104	14598
		YLL/1000	6.1	5.7	22.6	15.4	18.0	22.9	15.8	13.4	15.8
	Females	YLLs	517	297	1624	907	686	479	121	56	4687
		YLL/1000	6.0	2.1	5.5	4.3	5.6	12.4	6.2	7.4	5.1
2016	Males	YLLs	815	876	6144	3745	1934	603	205	79	14401
		YLL/1000	8.3	5.6	25.6	15.7	14.4	14.4	10.9	8.4	15.3
	Females	YLLs	699	326	1501	1131	590	250	98	27	4622
		YLL/1000	7.4	2.1	6.5	4.7	4.4	5.3	4.9	3.2	5.0
2017	Males	YLLs	966	1375	6679	5477	2503	520	277	106	17903
		YLL/1000	9.7	8.7	27.5	22.7	18.5	12.3	14.6	11.2	18.9
	Females	YLLs	882	742	1886	1430	713	218	140	24	6034
		YLL/1000	9.3	4.8	8.0	5.9	5.2	4.6	6.9	2.8	6.4
2018	Males	YLLs	1145	960	6333	4448	2291	685	280	106	16284
		YLL/1000	10.4	5.7	29.7	16.3	15.0	13.0	15.0	9.2	16.2
	Females	YLLs	487	355	1419	1006	603	330	119	93	4411
		YLL/1000	4.7	2.2	7.1	3.6	4.0	5.7	5.6	9.5	4.5
Total	Males	YLLs	4222	4845	31066	20248	10526	3035	1291	504	75737
		YLL/1000	8.7	6.2	24.2	17.3	15.9	15.0	13.5	11.0	16.0
	Females	YLLs	3406	2077	7544	5264	3091	1576	581	255	23794
		YLL/1000	7.3	2.7	6.0	4.4	4.6	6.9	5.8	6.1	5.1

5 years, the frequency of accidents in the age group of 15–29 years was more than other age groups (32.6%).

Table 4 shows the YLL caused by accidents in Golestan province by age groups and sex during the years 2014–2018. In general, there were about 99,531 years of life lost due to premature death during the period 2014 to 2018, and the share of men (75737 years, 16 per 1,000) was more than women (23794 years, 1.5 per 1,000). The highest number of years lost due to premature mortality in men in the age group of 15–29 years (24.2 per 1,000) and 30–44 (17.3 per 1000) and in women under the age of less than It was 4 years (7.3 per 1,000) and 69-60 years (6.9 per 1,000).

DISCUSSION

In this study, the epidemiological status of deaths due to accidents and the resulting YLL in Golestan province during the years 2014–2018 were investigated. The results of this study showed that deaths due to accidents in men were almost three times higher than in women. According to the World Health Organization, the average fatality rate for men was 24% higher than for women.[14] In another study in Golestan province, a study of the injured who referred to 5 Azar Hospital in Gorgan in 2013 and 2014 showed that the number of male patients was more than female.[15] According to a study by Rafiei et al., in 2007–2009 in Aq-Qala city in Golestan province, more than two-thirds of the injured referred to Al-Jalil hospital were men.[16] In the study by Macaranas et al., total of 668179 injury cases were recorded, and 68.99% of these cases involved males.[17]

Most of the deaths due to accidents in all study years were related to traffic accidents (52.1%). In other studies, also the majority of casualties due to accidents and incidents related to traffic accidents.[16,18] In the study by Macaranas et al., traffic crash has been the top cause (32.67%) of reported injury in the Philippines from 2011 to 2018, and this has been consistent throughout the years.[17] The reason for the high rate of deaths due to accidents in men compared to women is more high-risk behaviors in men than women. Previous studies have shown that behaviors such as speeding, improper use of vehicles, crossing unauthorized areas, and inadequate use of safety equipment can be named.[19,20]

The time trend in the number of accidents showed that the number of accidents in 2018 compared to 2014 has increased. In the study of Afkhamzadeh et al., to investigate the trend of accidents in Kurdistan province in the years 2010–2014, there has been an increase.[21] This increase may be due to an increase in the population at risk, an improvement in accident registration systems, or a real increase in accidents.[16,22]

According to the results, the frequency of accidents in the age group of 15–29 years was higher than in other age groups. In the Rafiei study, the highest number of referrals due to trauma was related to the age group of 20–29 years.[16] In the study of Aladlousi et al., the most injuries caused by accidents in the age group of 21–30 years[23], in the study of Khazaei et al., in Hamedan between 2009–2014, the highest incidence was related to the age group of 20–34 Has been years.[24] In a study conducted in the United Kingdom by Jones et al.; the highest percentage of casualties was related to people aged 15–29.[25] According to the results of other studies, it can be said that the young age group is at greater risk of various accidents due to greater mobility and dynamism.

CONCLUSION

In conclusion, this study showed that traffic accidents in Golestan Province impose a high burden on the community. However, the reduction in the burden of traffic accidents can result from the enactment and enforcement of new laws with heavier penalties, especially in suburban roads, the obligation of offenders to participate in training courses, an increase of public awareness about the use of helmets along with removing accident-prone points in roads, and increasing the number of emergency stations on the road. In Iran's health Map in the Fifth Economic, Social, and Cultural Development Plan, reduction of the burden of traffic accidents by at least 20% compared to the base year is one of the macro-goals by the end of the Five- Year Plan. Therefore, it is recommended to revise laws on the use of motorcycles, especially on helmet use for motorcyclists, enforce strict laws in residential areas, and review social determinants affecting the incidence of such accidents.

REFERENCES

[1] Heidari A, Kabir MJ, Jafari N, Babazadeh Gashti A, Pourabasi MA, et al. Assessment of human and physical resources in health houses and health-care centers providing emergency services: a study in Golestan province. *Journal of Health in the Field.* 2016; 3(4):1–8.
[2] Beigzadeh A, Naghibzadeh Tahami A, Rezaei H, Nazarieh M, Askari SMS. Epidemiology of trauma in Shahid Bahonar hospital in Kerman. *Journal of Emergency Practice and Trauma.* 2016; 2(2): 33–6.
[3] World Health Organization. Global status report on road safety 2013: supporting a decade of action: summary. *World Health Organization*; 2013.
[4] Garg N, Hyder AA. Exploring the relationship between development and road traffic injuries: a case study from India. *Eur J Public Health.* 2006; 16, 487–9.
[5] Abbasi M, Sadeghi M, Azami AA, Esmaeili SM, Kavousi J, Aryafard A. Factors related to road traffic accidents leading to injury or death in Shahroud city. *Safety Promotion and Injury Prevention.* 2016; 4(2): 83–90.
[6] Chandran A, Hyder AA, Peek-Asa C. The global burden of unintentional injuries and an agenda for progress. *Epidemiologic reviews.* 2010; 32(1): 110–20.
[7] Eri M, Jafari N, Kabir M J, Mahmoodishan G, Moghassemi M J, Tahanian M, et al. Concept and Challenges of Delivering Preventive and Care Services in Prehospital Emergency Medical Service: A Qualitative Study. *J Mazandaran Univ Med Sci.* 2015; 25(126): 42–57.
[8] World Health Organization (WHO). Injury: Leading Cause of the Global of Disease. Geneva: WHO; 2010.
[9] Salimi J, Zareei MR. Trauma: an epidemiological study from a single institute in Ahvaz, *Iran. Payesh.* 2008; 7(2): 115–120.
[10] Maraci M, Tabaresfahani M. The burden of road traffic injuries in Isfahan, Iran in 2010. *Journal of Kerman University of Medical Sciences.* 2013; 20(5): 505–19.
[11] Mathers CD, Bernard C, Iburg KM, Inous M, Ma Fat D, Shibuya K, et al. global burden of disease in 2002:data sources, methods and results. World Health Organization, December; 2003.
[12] world health organization Global program on Evidence for health policy: National burden of diseases: A practical Guide; second edition, October 2001.
[13] Ayatollahi, SMT & Hasanzadeh, Jafar & Ramezani, AA. (2009). The Burden of Traffic Accidents in South Khorasan Province, Iran in 2005. *Iran J Epidemiol.* 4. 51–57.
[14] Ganveer G, Tiwari R. Injury pattern among non-fatal road traffic accident cases: a cross sectional study in Central India. *Indian J Med Sci.* 2005; 59: 23–30.
[15] Kalantari S, Mehravar F, Kord F, Ghana S, Aghapour SA, Mohammadi R, Fazeli Aref L, Heidari A. The Epidemiology of Trauma in Golestan Province, Northeast Iran. *J Community Health Research.* 2017; 6(2): 102–08.
[16] Rafiei N, Latifi M, Sensebli G, Mohammadi A. Epidemiology of injury in Aq-Qala city-Iran, 2007–2012. *Journal of Safety Promotion and Injury Prevention.* 2015; 2(4): 270–273.
[17] Macaranas IT, Notarte KIR, Ver ATM, Pastrana AM, Chua FJ, Sumalapao DEP. An epidemiological report on the burden and trend of injuries in the Philippines from 2011 to 2018. *J Acute Dis* 2020; 9(5): 200–205.
[18] Kudebong M, Wurapa F, Nonvignon J, Norman I, Awoonor-Williams JK, Aikins M. Economic burden of motorcycle accidents in Northern Ghana. *Ghana Med J.* 2011; 45(4): 135–42.
[19] Ghaem H, Soltani M, Yadollahi M, ValadBeigi T, Fakherpour A. Epidemiology and outcome determinants of pedestrian injuries in a level I trauma center in southern Iran; a cross-sectional study. *Bull Emerg Trauma.* 2017; 5: 273–9.
[20] Ghaem H, Soltani M, Yadollahi M, Abdollahi M. An epidemiological study of accidents and incidents in fall victims referring to Shahid Rajaee hospital, Shiraz, 2009-2014. Trauma Monthly. Trauma Monthly 2018; 23: 1–8.
[21] Afkhamzadeh A, Vaisi Khodlan N, Rahmani K, Resaeian S, Mostafavi M, et al. An epidemiologic survey of the trend of accidents and injuries in Kurdistan province between 2010 and 2014. *SJKU.* 2019; 24(2): 41–51.

[22] Neghab M, Habibi M, Rajaeifard A, Choubineh A. Home accidents in Shiraz during a 3-year period (2000–2002). *JKUMS*. 2008; 11428–40.
[23] Akinmoladun TAI, Olusanya O, Fasola A. Evaluation of pedestrian road traffic maxillof acial injuries in a Nigerian tertiary hospital. *Afr J Med Med Sci*. 2014; 43: 353–9.
[24] Khazaei S, Mazharmanesh S, Khazaei Z, Goodarzi E, Mirmoini R, Mohammadian- Hafshejani A, et al. An epidemiological study on the incidence of accidents in the Hamadan province during 2009 to 2014. *PSJ*. 2016; 14: 8–16.
[25] Jones AP, Haynes R, Kennedy V, Harvey I, Jewell T, Lea D. Geographical variations in mortality and morbidity from road traffic accidents in England and Wales. *Health & place*. 2008; 14(3): 519–35.