Mortality Patterns of In-Patient Accidents: A Retrospective Hospital-Based Study In Kirkuk City

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ABSTRACT

The impact of accidents and injuries is substantial, particularly as they predominantly affect young individuals and often result in untimely death or significant disability. These incidents rank as the fourth leading cause of death worldwide and are the primary cause of mortality among youth in developing nations. This study aimed to identify the assessment of accident mortalities and the age group relationship to the sociodemographic characteristics of studied samples. A retrospective cross-sectional study was conducted to review hospital records of all traumatized mortalities presented to the Forensic Medicine and Police Cases Department / Kirkuk Health Directorate in Kirkuk Governorate/ Iraq, between 2018-2023 at Azadi Teaching Hospital, 390 cases collected and SPSS version 27, (frequencies/percentages). Chi-square was utilized for associating qualitative data. P-value ≤0.05 was considered to be statistically significant. The mean age ±SD of them was 29.47±19.26 years, 96 (24.6%) of them were between the ages of (20-29) years, and Alcohol consumption was reported among the tenth percent, the highest proportion of fatal accidents reported at night, particularly after dinner most etiology reported from careless, statistically a significant association reported between age group and marital status, education, occupation, Alcohol consumption, geographical accident, death time, etiology and diagnosis. The conclusions may be useful in developing strategies or an educational program for reducing injury-associated mortality.

Keywords: Mortality, injury, accident, Age.

INTRODUCTION

Injuries are increasingly acknowledged as a major contributor to the worldwide disease burden and as a significant health and socioeconomic concern worldwide [1]. Because they primarily affect young people and are typically followed by early death or severe disability, accidents and injuries carry a heavy burden. They are the top cause of death for young people in developing nations and the fourth most common cause of death worldwide. According to some estimates, violence and accidents account for 25% of disabilities in some nations [2]. Every year, traffic accidents, homicides, suicides, and other physical injuries claim the lives of thousands of people. Five million people worldwide die from unintentional or violent injuries each year, accounting for about 9% of all fatalities. Three of the most common causes of death for individuals aged five to 29 are car crashes, homicides, and suicide. Every year, traffic accidents claim the lives of nearly 1.3 million people. Additionally, between 200 and 50 million injuries are not fatal, and many of them result in disabilities [3]. These figures demonstrate that there are still a lot of trauma victims, even with numerous advancements in primary, secondary, and tertiary prevention—such as laws, the use of computed tomography (CT), and the creation of advanced trauma life support (ATLS). To lower these numbers, more preventative, diagnostic, and therapeutic options are required. [4]. One of the most important metrics for determining and tracking public health priorities is mortality, which includes the causes of death. The order of causes of death has not changed in the past three years, and unintentional accidents and injuries rank among the third leading causes of death in the US [5]. Ranking causes of death is an important way to distinguish the severity of different health issues. Nevertheless, significant obstacles persist even in the face of acknowledging the significance of data for mortality and causes of death. Because civil registration systems are not widely used or because not all information is recorded, many nations are not taking advantage of the vital statistics potential that these systems offer [6]. With 9% of all deaths and significant short- and long-term disability, traumatic injuries contribute significantly to the global burden of disease. Globally, injuries claim the lives of nearly 16,000 people every day. All age and income groups are affected by injuries, and the prevalence varies greatly between nations. Low-and-middle-income countries (LMICs) have disproportionately high rates of injuries. However, the majority of research comes from high-income countries, despite the fact that over 90% of injury-related deaths occur in LMICs. [7]. Injuries are the second greatest cause of death in Iran, according to a number of neighborhood studies [8]. Iraqi participants, both inside and outside of Iraq, participated in these studies to look at traumatic events and their aftermath, as well as the prevalence of traumatic stress symptoms in Egypt, Korea, Nigeria, and the United States [9,10]. due to the dearth of data regarding Kirkuk's causes of death, particularly with regard to mortality statistics. Even though Iraq is an upper-middle-income nation, little is known about the true causes of death, according to World Bank data from 2017. Iraqi death statistics "indicate severe quality issues; data have low completeness and/or issues with the cause-of-death assignment which likely affect estimated deaths by cause and time trends," according to the most recent WHO dataset. Consequently, our study sought to The purpose of this study was to determine how accident fatalities were assessed and how age groups related to the sociodemographic traits of the samples under study [11,12].

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METHODS

Study design

A retrospective cross-sectional study was conducted to review hospital records of all traumatized mortalities presented to the Forensic Medicine and Police Cases Department / Kirkuk Health Directorate in Kirkuk Governorate/ Iraq, between January 2018 and the end of December 2023 and whose records were available and completed. A special data form to gather the required information prepared by the researcher.

Setting

The present study was done at the Forensic Medicine Institute in Azadi Teaching Hospital in Kirkuk City/Iraq, which is considered the central referral hospital for mortality cases in the Kirkuk governorate.

Sample size and participants

All of the 390 fatal cases reported of accidents and injuries from 2018 to 2023 in the Forensic Medicine and Police Cases Department / Kirkuk Health Directorate in Kirkuk Governorate/ Iraq, at Azadi Hospital.

Inclusion criterion

Various types of accident fatality cases were included in the study recorded which happened in Kirkuk governorate between (2019-2023).

Exclusion criteria

The records of all deaths from accidents and injuries with less than the year of 2019 occasion.

Data collection tool

The information was obtained from the databank office of the Forensic Medicine Institute Hospital at the Hospital of Azadi Teaching of Kirkuk City/Iraq using medical files and medical reports, death certificates, exceptional questionnaires applied to collect data about sociodemographic features, accident/injury type, and the reason for death characteristics. Sociodemographic characteristics included age, gender, educational level, income, marital status, nationality, residence, and occupation. Moreover, the current study investigated death characteristics such as the site of injury, and time of death as hospital recorded or by police or relatives.

Statistical procedure

For statistical analysis, data was collected using the SPSS program (version 24). Descriptive statistics were applied (frequencies/ percentages), and Chi-square was utilized for associating qualitative data. P-value ≤0.05 was considered to be statistically significant.

Ethical considerations

An ethical improvement was taken from the committee of the Al-Qalam University College and Kirkuk Directorate of Health/ Forensic Institute, (a) there was an adequate strategy to protect the privacy of the documents in the research outputs. (b) there was adequate security of privacy; (c) the data opened by the researchers was de-identified.

Results

A total of 390 death causalities were reported in Kirkuk from 2019 to 2023, According to statistics from the Forensic Medicine Institute of Kirkuk Governorate. 96 (24.6%) of them were between the ages of (20-29) years and 23 (5.9%) were between the ages (50-59) years, the mean age ±SD of them was 29.47±19.26 years, and the death of males was 196 (50.3%) and females 194 (49.7%), the proportion of deaths inside the city showed higher rate by 197 (50.5%) than outside the city by 193 (49.5%) the details were shown in Table 1.

Table 1. Distribution of study samples (N=390) by their sociodemographic characteristics.

Variables	Features	Frequency	Percent
Age group (Years)	<10	52	(13.3)
	10-19	90	(23.1)
	20-29	96	(24.6)
	30-39	45	(11.5)
	40-49	40	(10.3)
	50-59	23	(5.9)
	>60	44	(11.3)
Gender	Male	196	(50.3)
	Female	194	(49.7)
Address	Inside City	197	(50.5)
	Outside City	193	(49.5)
Religion	Muslim	380	(98.5)
	Christian	10	(1.5)
Marital Status	Single	210	(53.8)
	Married	156	(40)
	Divorced	4	(1.0)
	Widow	20	(5.1)
Nationality	Kurdish	166	(42.6)
	Arabic	190	(48.7)
	Turkmen	24	(6.2)
	Christian	10	(2.6)
Family Income	Not Enough	210	(53.8)
	Enough	165	(42.3)
	Exceed Need	15	(3.8)
Education level	Illiterate	116	(29.7)
	Primary	122	(31.3)
	Secondary	97	(24.9)
	University	31	(7.9)
	Diploma	16	(4.1)
	≥Bachelor	8	(2.1)
Occupation	Unskilled Manual	84	(21.5)
	Semi-skilled manual	157	(40.3)
	Skilled manual and non-manual	24	(6.2)
	Associate Professional	2	(0.5)
	Child	43	(11.0)
	Student	38	(9.7)
	Unemployed or Housewife	42	(10.8)
Total		390	(100)

The results of the current study show that the proportion of the death smokers from accidents was 103 (26.3%), and the highest proportion of deaths occurred in the evening time 153(39.2%), in January with a rate of 153(39.2%), in winter 138(35.4%), in the first week 304(77.9%). While the lowest proportion of individual deaths from accidents was among ex-smokers 10(2.6%), at midnight 43(11%), in April and October with an equal ratio of 21(5.4%), in Autumn season 45(11.5%), 2(0.5) of them died at the fourth week of injuries (Table 2).

Table 2. Distribution of study sample circumstances.

Variables	Features	Frequency	Percent
Alcohol consumption	Alcoholic	35	(9.0)
	Non-Alcoholic	297	(76.1)
	NA*	58	(14.9)
Time	Midnight	43	(11.0)
	Morning	76	(19.5)
	Afternoon	118	(30.3)
	Dinner	153	(39.2)
Month	January	58	(14.9)
	February	37	(9.5)
	March	21	(5.4)
	April	36	(9.2)
	May	38	(9.7)
	June	25	(6.4)
	July	22	(5.6)
	August	32	(8.2)
	September	40	(10.3)
	October	21	(5.4)
	November	29	(7.4)
	December	31	(7.9)
Season	Winter	138	(35.4)
	Spring	87	(22.3)
	Summer	120	(30.8)
	Autumn	45	(11.5)
Place	Inside City	175	(44.9)
	Outside City	215	(55.1)
Week death	1st we	304	(77.9)
	2nd We	66	(16.9)
	3rd we	18	(4.6)
	4th we	2	(0.5)
Total		390	(100)

*Not applicable

According to the findings of this study, the most affected part due to the death of the individuals all body parts were reported with percent of 127(32.6%), and the highest proportion of death rate etiology reported among those who been carless 93 (23.8%), road traffic accident showed the highest proportion 108 (27.7%) of clinical diagnosis, whereas the lowest proportion of deaths reported in head parts, lower limbs and abdomen and chest 6 (1.5%), hit by vehicle 6 (1.5%), and explosion 6 (1.5) illustrated as the lowest proportion as (Table 3) of the death individuals.

Table 3. Clinical Characteristics and etiology of the study sample.

Variables	Features	Frequency	Percent
Site affected	All	127	(32.6)
	Head, face, and neck	111	(28.5)
	Head, Abdomen, and Chest	27	(6.9)
	Head parts, upper and lower limbs	23	(5.9)
	Head parts and upper limbs	19	(4.9)
	Head parts, upper limbs, Abdomen, and Chest	18	(4.6)
	Abdomen and Chest	15	(3.8)
	Upper, lower limbs and abdomen plus chest	15	(3.8)
	Head parts and lower limbs	12	(3.1)
	Lower limbs, Abdomen, and Chest	10	(2.6)
	Lower Limbs	7	(1.8)
	Head parts, lower limbs, and Abdomen and Chest	6	(1.5)
Causes	Careless	93	(23.8)
	Distraction	68	(17.4)
	Safety Issues	61	(15.6)
	Speeding	64	(16.4)
	Socioeconomic Problem	52	(13.3)
	Fatigue	11	(2.8)
	Terrorism	10	(2.6)
	Inadequate law enforcement	8	(2.1)
	Hit by vehicle	6	(1.5)
	Other/Unknown	17	(4.4)
Diagnosis	Burns	183	(46.9)
	RTA	108	(27.7)
	Fall from high	41	(10.5)
	Bullet injury	30	(7.7)
	Fight/Hit	11	(2.8)
	Explosion	6	(1.5)
	Suffocation/drowning	3	(0.8)
	Suicide	2	(0.5)
	Others/Unknown	6	(1.5)
Total		390	(100)

In the current study among 210 death single persons, the highest proportion between the ages of 10 and 19 years old was 85(40.5%), and the lowest proportion reported among those >60 years old by 2(1.0%) a significant association (P≤0.001) illustrated between marital

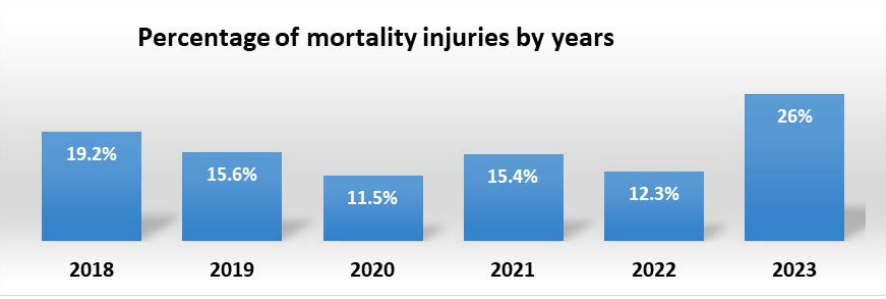

Figure 1. Distribution of mortality injuries by years

Table 4. Association of age group and sociodemographic risks due to accident mortality.

Features	Age group							Total	P-value
	< 10	10-19	20-29	30-39	40-49	50-59	≥ 60		
Marital Status									
Single	52(24.8)	85(40.5)	52(24.8)	9(4.3)	7(3.3)	3(1.4)	2(1.0)	210(100)	
Married	0(0.0)	5(3.2)	44(28.2)	34(21.8)	32(20.5)	17(10.9)	24(15.4)	156(100)	
Divorced	0(0.0)	0(0.0)	0(0.0)	2(50)	1(25)	0(0.0)	1(25)	4(100)	<0.001
Widow	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	3(15.0)	17(85)	20(100)	
The educational level of the mother									
Illiterate	49(42.2)	10(8.6)	20(17.2)	13(11.2)	7(6.0)	7(6.0)	10(8.6)	116(100)	
Primary	3 (2.5)	28 (23)	37(30.3)	13(10.7)	14(11.5)	6(4.9)	21(17.2)	122(100)	
Secondary	0(0.0)	41(42.3)	17(17.5)	12(12.4)	14(14.4)	5(5.2)	8(8.2)	97(100)	
University	0(0.0)	11(35.5)	12(38.7)	1(3.2)	0 (0.0)	5(16.1)	2(6.5)	31(100)	
Diploma	0(0.0)	0(0.0)	7(43.8)	5(31.3)	3(18.8)	0(0.0)	1(6.3)	16(100)	<0.001
≥Bachelor	0(0.0)	0(0.0)	3(37.5)	1(12.5)	2(25)	0(0.0)	2(25)	8(100)	
Family Income									
Not Enough	30(14.3)	53(25.2)	55(26.2)	21(10)	18(8.6)	11(5.2)	22(10.5	210(100)	
Enough	19(11.5)	31(18.8)	39(23.6)	24(14.5)	21(12.7)	11(6.7)	20(12.1)	165(100)	0.262
Exceed Need	3(20)	6(40)	2(13.3)	0(0.0)	1(6.7)	1(6.7)	2(13.3)	15(100)	
Occupation Level									
Unskilled Manual	9 (10.7)	24(28.6)	24(28.6)	4(4.8)	3(3.6)	3(3.6)	17(20.2)	84(100)	
Semi-skilled manual	0(0.0)	32(20.4)	48(30.6)	30(19.1)	24(15.3)	13(8.3)	10(6.4)	157(100)	
Skilled manual/non-manual	0(0.0)	0(0.0)	7(29.2)	6(25)	7(29.2)	2(8.3)	2(8.3)	24(100)	
Associate Professional	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(0.0)	0(0.0)	1(50.0)	2(100)	
Child	38(88.4)	5(11.6)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	43(100)	
Student	5(13.2)	28(73.7)	5(13.2)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	38(100)	<0.001
Unemployed or Housewife	0(0.0)	1(2.4)	12(28.6)	5(11.9)	5(11.9)	5(11.9)	14(33.3)	42(100)	
Alcohol Drinking									
Yes	0(0)	3(8.6)	7(20)	8(22.9)	10(28.6)	4(11.4)	3(8.6)	35(100)	
No	5(1.7)	82(27.6)	85(28.6)	36(12.1)	30(10.1)	18(6.1)	41(13.8)	297(100)	<0.001
NA	46(79.3)	6(10.3)	4(6.9)	1(1.7)	0(0.0)	1 (1.7)	0(0.0)	58(100)	
Total	52(13.3)	90(23.1)	96(24.6)	45(11.5)	40(10.3)	23(5.9)	44(11.3)	390(100)	

Table 5. Association between environmental circumstances and age mortality group.

Features	Age group							Total	P-value
	<10	10-19	20-29	30-39	40-49	50-59	>60		
Season									
Winter	24(17.4)	32(23.2)	38(27.5)	16(11.6)	9(6.5)	7(5.1)	12(8.7)	138(100)	
Spring	9(10.3)	17(19.5)	20(23)	12(13.8)	10(11.5)	5(5.7)	14(16.1)	87(100)	0.341
Summer	9(7.5)	29(24.2)	33(27.5)	12(10)	16(13.3)	8 (6.7)	13(10.8)	120(100)	
Autumn	10(22.2)	12(26.7)	5(11.1)	5(11.1)	5(11.1)	3(6.7)	5(11.1)	45(100)	
Address									
Inside City	19(9.6)	40(20.3)	51(25.9)	23(11.7)	23(11.7)	12(6.1)	29(14.7)	197(100)	
Outside City	33(17.1)	50(25.9)	45(23.3)	22(11.4)	17(8.8)	11(5.7)	15(7.8)	193(100)	0.02
Accident time									
Day	27(14.1)	41(21.5)	47(24.6)	16(8.4)	22(11.5)	13(6.8)	25(13.1)	191(100)	
Night	25(12.6)	49 (24.6)	49(24.6)	29(14.6)	18(9)	10(5)	19(9.5)	199(100)	0.339
Injury Place									
Inside City	17(9.7)	37(21.1)	48(27.4)	18(10.3)	18(10.3)	10(5.7)	27(15.4)	175(100)	
Outside city	35(16.3)	53(24.7)	48(22.3)	27(12.6)	22(10.2)	13(6.0)	17(7.9)	215(100)	0.021
Death time									
1st week	48(15.8)	62(20.4)	66(21.7)	30(9.9)	35(11.5)	21(6.9)	42(13.8)	304(100)	
2nd Week	3(4.5)	19(28.8)	24(36.4)	13(19.7)	4(6.1)	2(3.0)	1(1.5)	66(100)	
3rd week	1(5.6)	9(50)	5(27.8)	2(11.1)	0(0.0)	0(0.0)	1(5.6)	18(100)	<0.001
4th week	0(0.0)	0(0.0)	1(50)	0(0.0)	1(50)	0(0.0)	0(0.0)	2(100)	
Total	52(13.3)	90(23.1)	96(24.6)	45(11.5)	40(10.3)	23(5.9)	44(11.3)	390(100)	

Table 6. Association between the clinical features and the age group of mortality accidents.

Features	Age group							Total	P-value
	<10	10-19	20-29	30-39	40-49	50-59	>60		
Causes									
Speeding	6(9.4)	19(29.7)	9(14.1)	8(12.5)	3(4.7)	8(12.5)	11(17.2)	64(100)	
Careless	31(33.3)	19(20.4)	20(21.5)	7(7.5)	5(5.4)	4(4.3)	7(7.5)	93(100)	
Distraction	13(19.1)	9(13.2)	15(22.1)	3(4.4)	14(20.6)	7(10.3)	7(10.3)	68(100)	
Socioeconomic Problem	0(0.0)	17(32.7)	24(46.2)	6(11.5)	3(5.8)	0(0.0)	2(3.8)	52(100)	
Inadequate law enforcement	2(25)	0(0.0)	1(12.5)	1(12.5)	3(37.5)	0(0.0)	1(12.5)	8(100)	
Safety Issues	0(0.0)	18(29.5)	18(29.5)	10(16.4)	8(13.1)	1(1.6)	6(9.8)	61(100)	
Fatigue	0(0.0)	1(9.1)	0(0.0)	1(9.1)	0(0.0)	3(27.3)	6(54.5)	11(100)	
Hit by vehicle	0(0.0)	3(50)	0(0.0)	1 (16.7)	1(16.7)	0(0.0)	1(16.7)	6(100)	<0.001
Terrorism	0(0.0)	0(0.0)	3(30)	5(50)	2(20)	0(0.0)	0(0.0)	10(100)	
Other/Unknown	0(0.0)	4(23.5)	6(35.3)	3(17.6)	1(5.9)	0(0.0)	3(17.6)	17(100)	
Injured part									
Head	45(13)	82(23.7)	90(26)	36(10.4)	36(10.4)	20(5.8)	37(10.7)	346(100)	0.301
Chest/Abdomen	24(10.6)	61(26.9)	65(28.6)	31(13.7)	19(8.4)	9(4)	18(7.9)	227(100)	0.017
Upper limbs	20(9.3)	54(25.1)	64(29.8)	25(11.6)	17(7.9)	9(4.2)	26(12.1)	215(100)	0.956
Lower limbs	15(7.8)	51(26.6)	53(27.6)	25(13)	15(7.8)	10 (5.2)	23(12)	192(100)	0.623
Back	7(6.7)	31(29.8)	28(26.9)	13(12.5)	10(9.6)	3(2.9)	12(11.5)	104(100)	0.926
Diagnosis									
RTA	17(15.7)	26(24.1)	16(14.8)	9(8.3)	15(13.9)	10(9.3)	15(13.9)	108(100)	
Fall from high	9(22)	5(12.2)	4(9.8)	3(7.3)	6(14.6)	5(12.2)	9(22)	41(100)	
Burns	18(9.8)	49(26.8)	56(30.6)	21(11.5)	13(7.1)	8(4.4)	18(9.8)	183(100)	
Bullet injury	2(6.7)	5(16.7)	12(40)	5(16.7)	6(20)	0(0.0)	0(0.0)	30(100)	
Suffocation/drowning	3(100)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	3(100)	<0.001
Suicide	0(0.0)	1(50)	1(50)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	2(100)	
Explosion	0(0.0)	0(0.0)	2(33.3)	4(66.7)	0(0.0)	0(0.0)	0(0.0)	6(100)	
Fight/Hit	0(0.0)	3(27.3)	5(45.5)	1(9.1)	0(0.0)	0(0.0)	2(18.2)	11(100)	
Others/Unknown	3(50)	1(16.7)	0(0.0)	2(33.3)	0(0.0)	0(0.0)	0(0.0)	6(100)	
Total	52(13.3)	90(23.1)	96(24.6)	45(11.5)	40(10.3)	23(5.9)	44(11.3)	390(100)	

status and the age groups, among 116 illiterates the highest proportion of mortalities was among <10 years old and the lowest proportion reported among 40-49 years and 50-59 separately (P≤0.001), among 42 un employee or housewife the highest proportion of death report at the age ≤60 with a ratio of 14(33.3%), while lowest proportion of mortality rate reported between the age of victims by 1(2.4%) and the occupation types (Tab 4) and statistically a significant association reported between them (P≤0.001).

According to Table 5, a statistically significant association was reported between the mortality rate and the address of victims (P=0.02), the location of accidents (P=0.021), and death time (0.001). However, a statistically non-significant association was recorded in the occurrence of accidents (P=0.339) and the age group of accident victims.

Further, the results of this study showed a significant association between the age group and causes of the accidents (P≤0.001), chest/abdomen injured part (P=0.017), and the diagnosis of accident types (P≤0.001), whereas a statistically non-significant association was reported between the age group of the victims and head injured (P=0.301), upper limbs (P=0.956), lower limbs (P=0.623), and back parts (P=0.926) as presented in detail in Table 6.

According to Figure 1, this study showed that the highest number of accidents due to death occurrence was in 2023 (26%) and the lowest was reported in 2020 (11.5%).

DISCUSSION

The current number of deaths among widowed from accidents in Kirkuk governorate is the highest proportion recorded among old individuals, this finding was in agreement with another prospective study conducted by [13] that gathered data from the US National Health and Nutrition Examination Survey between the years 1999-2014. However, another study examined the association of marital status with total and cause-specific mortality and illustrated that the health risks (HRs) were higher among single participants [14-16] who were younger than 65 years (HR, 1.79; 95% CI, 1.54-2.08) than those who were aged 65 years and older (HR, 1.11; 95% CI, 1.02-1.22) (P < 0.001). The variation in this result might be returned due to many factors such as lifestyle and circumstance that impact the mortality rate of victims. Concerning the educational background, among 116 illiterate people who died from accidents, the highest proportion was reported among those who were aged<10 years (42.2%), and this proportion was illustrated among those who graduated from secondary school at the age of 10-19 years, In support of our findings, a meta-analysis systematic review conducted in the USA between 2010 and 2017 by [17] and IHME-CHAIN Collaborators [18] revealed that learning was associated with a dose-response relationship with all-cause adult mortality, with a regular decrease in mortality hazard of 1.9% (95% CI 1.8-2.0) per additional year of education. With a regular decrease in mortality hazard of 2.9% (2.8-3.0) for adults aged 18–49 years, compared to a 0.8% (0.6–1.0) reduction for adults aged over 70, the effect was greater

in earlier age clusters than in elder age clusters. According to the results of the current study, there was a significant association between the elderly (>60 years) individuals' death proportion from 42 injuries and accidents and housewife's/unemployment occupation by one-third, nearly this percentage illustrated among 157 deaths between the age of 20-29 years of Semi-skilled manual occupation. In contrast, a study conducted in Rome by (19) found that the age-adjusted health risks by type of occupation for employed males and females were primarily caused by cancer and cardiovascular disease (CVD), accounting for 42715 deaths in men and 29 915 in women. All other categories posed a greater risk in both sexes when compared to highly qualified non-manual workers, according to another study (20), which included a total of 25 studies. Adjustment for prior health and demographics prejudiced the relationship between mortality and retirement ($p<0.05$). Among 215 rural accidents and injuries mortality in the age below 20 years old the highest proportion was reported and there was a significant correlation between the rural location of mortalities and the age factors ($P\leq0.001$), in agreement with our results investigated Urban and rural differences in morbidity and mortality in Northern Ireland [(21)] reported that death rates in the greatest rural regions were developed in children and adults aged ≤20 years old. Another study showed the same results in rural areas, but a higher impact was reported in adult individuals [(22)] in Burkina Faso this result was due to rapid and often uncontrolled urbanization besides that sub-Saharan African lifestyle had variation characteristics than Middle East areas completely. The death age of <10 years in the current illustrated that 15.8 percent occur in the 1st week mortalities out of 304 cases of accidents/injuries circumstances and statistically a significant relationship was reported between the age of victims and the occurrence time of the death (P-value<0.001). The peak onset of the classic trimodal of trauma deaths is instant death happening within seconds of the accidents. These clients are professed dead on the scene after being received by the hospital. A lot of studies stated that it contains mortalities at the scene, deaths occurring within 1st hour of the hospital receiving, and all mortalities in the emergency unit. That can be on the whole a significance of nonsurvivable and likely severe injuries. According to a study conducted in the 1970s, almost two-thirds and over 0.5 percent of trauma deaths occurred on the spot, with the clients—especially children—not even being sent to a hospital [(23)]. Children are more likely to die in the emergency department (ED) than to live long enough to be admitted to the hospital or transferred to the operating room when compared to trauma patients in adults[(24)].In the current study, one-third of the victims who <10 years of careless etiology showed a significant association between age and causes of death out of 93 deaths (P-value<0.001).Among 227 chest and abdomen injuries casualties the most age reported in the present study was between 20-29 years by more than one-fourth percentage and statistically a significant association was illustrated between them (P-value = 0.017). Finally, out of 183 deaths from burns of the same age showed statically a significant association between the etiology of death and the age factors by nearly one-third (P-value <0.001), Among 108 deaths from road traffic accidents (RTAs), the prevalence of adolescents (10-29 years) was reported as the highest proportion by nearly one-fourth and statistically a significant association (P-value <0.001) was reported between the causes of death and between (10-20 years). In agreement with our findings, a retrospective survey between (2017-2019) among 3743 showed that one-fourth of injured/dead victims of RTAs were young (10-20 years) [(23)]. The finding of the current study disagreed with a prospective study conducted in Erbil collected 2225 injuries and deaths reported showed lesser than this proportion nearly by one-tenth (8.2%) [(25)] , to our opinion this disagreement is due to the gap of the time of the study that was in Covid-19 pandemic and the lifestyle in Erbil differs somehow than in Kirkuk.

CONCLUSION

The conclusions may be useful in developing strategies or an educational program for reducing injury-associated mortality.

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REFERENCES

1.Amiri S, Sadeghi-Bazargani H, Nazari S, Ranjbar F, Abdi S. Attention deficit/hyperactivity disorder and risk of injuries: a systematic review and meta-analysis. JIVRSs 2017 Jul;9(2):95.
2. Hussain AM, Lafta RK. Accidents in Iraq during the period of conflict (2003–2016). Qatar Med J. 2019 Dec 24;2019(3):14.
3. Lahare VK, Verma N, Chandrakar A, Shrivastava N, Dengani M, Gupta SA. A community-based cross-sectional study on the epidemiology of injuries in Raipur City, Chhattisgarh. Cureus. 2023 Jul;15(7).
4. Van Breugel JM, Niemeyer MJ, Houwert RM, Groenwold RH, Leenen LP, Van Wessem KJ. Global changes in mortality rates in polytrauma patients admitted to the ICU—a systematic review. WJES.2020 Dec;15:1-3.
5. Xu J, Kochanek KD, Murphy SL, Tejada-Vera B. National vital statistics reports. National vital statistics reports. 2010 May 20;58(19):1-36.
6. Salih SO, Moramarco S, Di Giovanni D, Qadir SA, Alsilefanee HH, Basa FB, Gialloreti LE. Ten-year mortality trends and natural causes of death in the Iraqi Kurdistan. TOPHJ. 2021;14(1):264-71.
7. Chkhaberidze N, Burkadze E, Axobadze K, Pitskhelauri N, Kereselidze M, Chikhladze N, Coman MA, Peek-Asa C. Epidemiological characteristics of injury in Georgia: a one-year retrospective study. Injury. 2022 Jun 1;53(6):1911-9.
8. Yadollahi M, Mokhtari AM, Malekhoseini HR. Fatality rate of trauma victims in southern Iran: a five-year survey. Trauma Monthly. 2018 Jan 1;23(1).
9. Mahran DG, Farouk OA, Qayed MH, Berraud AF. Hospitalized injuries and deaths in a trauma unit in upper Egypt. Int J Crit Sci. 2013 Oct 1;3(4):235-40.
10. DiMaggio C, Ayoung-Chee P, Shinseki M, Wilson C, Marshall G, Lee DC, Wall S, Maulana S, Pachter HL, Frangos S. Traumatic injury in the United States: in-patient epidemiology 2000–2011. Injury. 2016 Jul 1;47(7):1393-403.
11. Rashid H, Ismail KH. Characteristics and outcome of road traffic accidents in Erbil: A prospective hospital-based study: A prospective hospital-based study. Zanco J Med Sci. 2023 Dec 20;27(3):315-28.
12.Ayed AY, Younis NM, Ahmed MM. Teachers' knowledge about communicable disease control at primary schools in Mosul City: A cross-sectional study. IJAM. 2024 Apr 1;10(2):75-9.
13.Wang L, Yi Z. Marital status and all-cause mortality rate in older adults: a population-based prospective cohort study. BMC geriatrics. 2023 Apr 4;23(1):214.

14. Leung CY, Huang HL, Abe SK, Saito E, Islam MR, Rahman MS, Ikeda A, Sawada N, Tamakoshi A, Gao YT, Koh WP. Association of marital status with total and cause-specific mortality in Asia. JAMA network open. 2022 May 2;5(5): e2214181-.
15. Bashrat V, Summan SI, Mushait HO, Alabdullah SA, Mohammed BA. Pattern of Sleep and Evaluation of Sleep Quality and Sleep-Disturbing Factors Among Adults in Saudi Arabia. Bahr Med Bull. 2023 Jun 1;45(2).
16. Rashid H, Ismail KH. Characteristics and outcome of road traffic accidents in Erbil: A prospective hospital-based study: A prospective hospital-based study. Zanco Journal of Medical Sciences (Zanco J Med Sci). 2023 Dec 20;27(3):315-28.
17. Sasson I, Hayward MD. Association between educational attainment and causes of death among white and black US adults, 2010-2017. Jama. 2019 Aug 27;322(8):756-63.
18. Balaj M, Henson CA, Aronsson A, Aravkin A, Beck K, Degail C, Donadello L, Eikemo K, Friedman J, Giouleka A, Gradeci I. Effects of education on adult mortality: a global systematic review and meta-analysis. The Lan P H. 2024 Jan 23.
19. Paglione L, Angelici L, Davoli M, Agabiti N, Cesaroni G. Mortality inequalities by occupational status and type of job in men and women: results from the Rome Longitudinal Study. BMJ open. 2020 Jun 1;10(6): e033776.
20. Sewdas R, De Wind A, Stenholm S, Coenen P, Louwerse I, Boot C, Van Der Beek A. Association between retirement and mortality: working longer, living longer? A systematic review and meta-analysis. JECH. 2020 May 1;74(5):473-80.
21. O'Reilly G, O'Reilly D, Rosato M, Connolly S. Urban and rural variations in morbidity and mortality in Northern Ireland. BMC Public Health. 2007 Dec; 7:1-6.
22. Lankoande B, Sié A, Shapiro D. Selective adult migration and urban-rural mortality differentials in Burkina Faso. Population. 2017;72(2):197-218.
23. Sobrino J, Shafi S. Timing and causes of death after injuries. In University Med Center Proceedings. 2013 Apr 1 (Vol. 26, No. 2, pp. 120-123). Taylor & Francis.
24. Kim JY, Yoon YH, Park SJ, Hong WP, Ro YS. Mortality and incidence rate of acute severe trauma patients in the emergency department: a report from the National Emergency Department Information System (NEDIS) of Korea, 2018–2022. CEEM. 2023 Nov;10(Suppl): S55.
25. Hemadi N, Alwadai TS, Algouzi AA, Abdullah AM, Albishri MB, Aseri HS, Argabi MA, Ali NT, AlQhtani MB, Alzahrani AA, Al-Mudhi MM. General Population's Awareness of PE and DVT and its Risk Factor in Asir region, Saudi Arabia. Bahr Med Bull. 2022 Mar 1;44(1).