ORIGINAL ARTICLE

Pattern of Injuries in Females Attending Emergency Room at New Damietta Hospital, Al-Azhar University

Ashraf I. Hassan [a,*], Nawal M. Taha [b], Mohammed K. M. Ayoub [a]

[a] Department of Forensic Medicine and Clinical Toxicology, Faculty of Medicine for Boys, Al-Azhar University, Cairo, Egypt
[b] Department of Forensic Medicine, Faculty of Medicine, Al-Azhar University, Damietta, Egypt

Abstract

Background: ***Female injury patterns present unique epidemiological and medicolegal challenges, especially in conservative communities where gender-based violence may be underreported. Emergency departments serve as the frontline for recognizing and documenting such injuries.***

Objective: ***To analyze the pattern, nature, and causes of injuries among female patients presenting to the Emergency Room at New Damietta Hospital, Al-Azhar University.***

Subjects and methods: ***This prospective cross-sectional study, conducted from January 2024 to January 2025 at Al-Azhar University Hospital in New Damietta, analyzed injury patterns in 204 physically injured female patients.***

Results: ***The highest injury rates were found in children aged 0–9 years (23.5%) and women over 60 (22.5%). Younger females mostly suffered mild injuries, while older women experienced more dangerous injuries, with statistically significant age-related differences (P < .05). Most injured individuals were housewives (50.5%), followed by students and children. Urban residents were slightly more affected than rural ones, and a majority of the injured females were married (74.7%).***

Conclusion: ***The study found that injury rates were highest among females aged 0–9 and over 60. Younger females mostly sustained mild injuries, whereas older females experienced more severe harm. Housewives and urban residents were the most affected groups. The age-related differences in injury severity have important legal implications, emphasizing the need for targeted prevention efforts and accurate medicolegal documentation.***

Keywords: Female injuries; Trauma Patterns; Medicolegal Documentation; New Damietta; Egypt

1. Introduction

Injuries among women remain an important yet often under-documented public health concern in Egypt, especially in rural and Upper Egyptian hospital settings. Hospital-based trauma data frequently suffer from incomplete documentation, limiting understanding of injury trends and medicolegal implications.[1] Emergency departments serve as pivotal entry points for recognizing trauma arising from domestic violence, accidents, assaults, and self-harm, although detailed data on female-specific injury patterns are scarce in Egypt.[2] In conservative contexts, gender-based violence is often unreported or recorded inadequately due to stigma and systemic gaps in documentation practices. National demographic research indicates that women's education and employment status are linked to a lower risk of physical intimate partner violence, with education mediating IPV outcomes before and after the Arab Spring.[3] Despite high estimates globally that one in three women experiences intimate partner violence, Egypt lacks sufficient hospital-based studies examining injury patterns in female patients, particularly in Upper and Lower Egypt. A tertiary teaching hospital like New Damietta—affiliated with Al-Azhar University—offers a crucial context for analyzing the epidemiology and causes of female injuries across urban and rural populations. Yet, most Egyptian emergency settings do not employ standardized, gender-sensitive injury documentation tools, and psychological or cultural barriers often deter women from reporting violent incidents—a challenge echoed in hospital reporting completeness studies across Upper Egypt.[1]

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* Corresponding author at: Forensic Medicine and Clinical Toxicology, Faculty of Medicine for Boys, Al-Azhar University, Cairo, Egypt.
E-mail address: nawaltaha94@gmail.com(N. M. Taha).

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This study aims to characterize the patterns, causes, and medicolegal implications of injuries among women presenting to New Damietta Hospital's emergency department, with the goal of informing policy development and strengthening gender-responsive trauma care systems.

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2. Patients and methods

This prospective hospital-based cross-sectional study was conducted at the Emergency Department of Al- Azhar University Hospital in New Damietta from January 2024 to January 2025. The study aimed to assess injury patterns in female patients presenting with physical trauma. A total of 204 female patients of various age groups were included.

Ethical approval was obtained from the Faculty of Medicine's Institutional Review Board (Approval No. 000005, dated 3/12/2023). Informed written consent was secured from all participants or their legal guardians.

Inclusion criteria were all physically injured females with adequate documentation. Exclusion criteria included refusal to participate, suspected fabrication, or psychiatric conditions. Upon presentation, patients were clinically assessed and stabilized before obtaining consent. A confidential history, injury context, and a complete physical examination were conducted by trained physicians. Independent variables studied included age, marital status, education, socioeconomic status, occupation, and residence. Dependent variables were the type, cause, and anatomical location of injuries.

Statistical study: Data were coded and analyzed using SPSS version 25. Descriptive and inferential statistics were applied. The Chi-square test assessed associations between variables, with significance set at $P < 0.05$. Data were presented in tables and figures where applicable.

3. Results

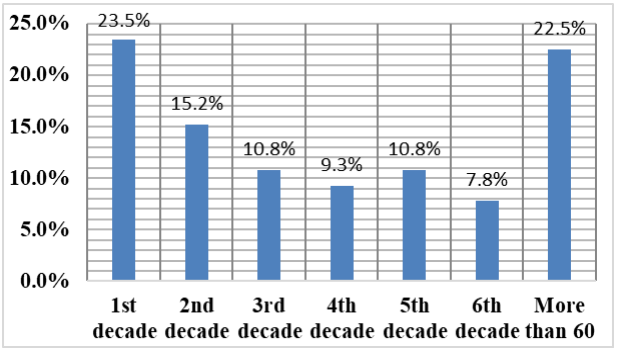

Figure 1. percentage of injured females in each age group.

Figure 1 shows the percentage of injured females in each age group. A total of 204 female cases were studied and categorized into age groups by decade. The distribution of female injury cases revealed the highest frequency in the 1st decade (0–9 years), accounting for 23.5%, followed closely by women older than 60 years (22.5%). The lowest frequency was observed in the 6th decade (50–59 years) at 7.8%. Intermediate frequencies were recorded across the 2nd, 3rd, 4th, and 5th decades, ranging from 9.3% to 15.2%.

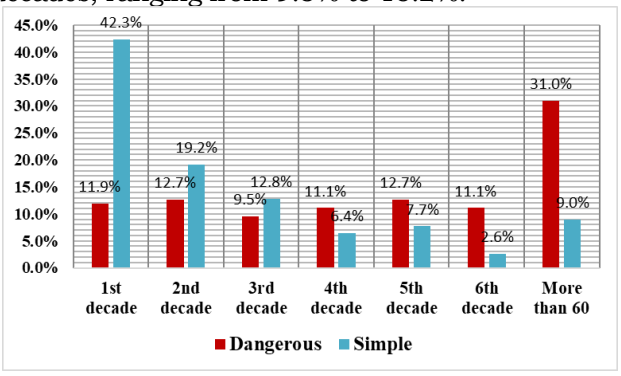

Figure 2. percentage of degree of severity of injury in different age group

Figure 2 displays the percentage and severity of injuries across different age groups. It shows that most injuries in the first decade of life were mild, in contrast to older age groups, which experienced a higher proportion of severe injuries, classified as dangerous under legal definitions. N: number; %: percentage.

Table 1. profile and pattern of female injuries of the studied cases

	1ST DECADE	2ND DECADE	3RD DECADE	4TH DECADE	5TH DECADE	6TH DECADE	MORE THAN 60	P VALUE
CAUSE OF INJURY								
DOMESTIC ACCIDENT	4 (15.4)	10 (38.5)	4 (15.4)	4 (15.4)	3 (11.5)	1 (3.8)	0 (0)	
WORK RELATED	0 (0)	5 (38.5)	2 (15.4)	5 (38.5)	1 (7.7)	0 (0)	0 (0)	
RTA	4 (9.3)	5 (11.6)	7 (16.3)	5 (11.6)	7 (16.3)	7 (16.3)	8 (18.6)	
BURN	27 (93.1)	2 (6.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
FALL	13 (14.1)	9 (9.8)	8 (8.7)	5 (5.4)	11 (12)	8 (8.7)	38 (41.3)	P< .005*
ASSAULT	0 (0)	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)	
TYPE OF INJURY								
BLUNT INJURIES	12 (25)	4 (12.9)	4 (18.2)	6 (31.6)	1 (4.5)	1 (6.3)	3 (6.5)	
SHARP INJURIES	4 (8.3)	12 (38.7)	8 (36.4)	5 (26.3)	5 (22.7)	1 (6.3)	1 (2.2)	
SCALD	27 (56.3)	2 (6.5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
FRACTURE	5 (10.4)	9 (29)	10 (45.5)	8 (42.1)	16 (72.7)	14 (87.5)	42 (91.3)	P=.004*
AMPUTATION	0 (0)	4 (12.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
SITE OF INJURY								
ABDOMEN	4 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
CHEST	3 (17.6)	1 (5.9)	1 (5.9)	3 (17.6)	3 (17.6)	1 (5.9)	5 (29.4)	

FACE	10 (58.8)	3 (17.6)	2 (11.8)	0 (0)	0 (0)	0 (0)	2 (11.8)	
HEAD	7 (36.8)	2 (10.5)	2 (10.5)	3 (15.8)	3 (15.8)	1 (5.3)	1 (5.3)	
LOWER LIMB	8 (12.5)	5 (7.8)	7 (10.9)	2 (3.1)	5 (7.8)	8 (12.5)	29 (45.3)	P< .001*
PELVIS	2 (16.7)	3 (25)	2 (16.7)	1 (8.3)	1 (8.3)	1 (8.3)	2 (16.7)	
UPPER LIMB	14 (19.7)	17 (23.9)	8 (11.3)	10 (14.1)	10 (14.1)	5 (7)	7 (9.9)	
SEVERITY								
SIMPLE	33 (42.3)	15 (19.2)	10 (12.8)	5 (6.4)	6 (7.7)	2 (2.6)	7 (9)	P< .001*
DANGEROUS	15 (11.9)	16 (12.7)	12 (9.5)	14 (11.1)	16 (12.7)	14 (11.1)	39 (31)	

The table presents the distribution of injury severity, categorized as simple or dangerous, across various female age groups. The data reveal a trend of increasing injury severity with age. Dangerous injuries are more common in older age groups, particularly among those above 60 years. Conversely, simple injuries are more evenly distributed, with a higher frequency in younger age groups.

Table 1 illustrates the profile and pattern of female injuries in the studied cases. Data are presented as frequency (percentage) across age groups. Percentages are row-based and reflect the distribution of injury causes, types, sites, severity, and types of falls across different decades of life. Statistical significance was assessed using the Chi-square test; results with P < .05 were considered statistically significant. An asterisk (*) denotes significant differences across age groups.

Table 2. Cause and site of injury

	CAUSE OF INJURY						
	Domestic accident	Work related	RTA	Burn	Fall	Assault	P value
SITE	N(%)	N(%)	N(%)	N(%)	N(%)	N(%)	
ABDOMEN	0 (0)	0 (0)	0 (0)	4 (13.8)	0 (0)	0 (0)	
CHEST	0 (0)	0 (0)	9 (20.9)	1 (3.4)	7 (7.6)	0 (0)	P< .001*
FACE	0 (0)	2 (15.4)	4 (9.3)	5 (17.2)	6 (6.5)	0 (0)	X^2= 114.9
HEAD	0 (0)	1 (7.7)	5 (11.6)	1 (3.4)	11 (12)	1 (100)	
LOWER LIMB	1 (3.8)	1 (7.7)	14 (32.6)	7 (24.1)	41 (44.6)	0 (0)	
PELVIS	0 (0)	0 (0)	4 (9.3)	2 (6.9)	6 (6.5)	0 (0)	
UPPER LIMB	25 (96.2)	9 (69.2)	7 (16.3)	9 (31)	21 (22.8)	0 (0)	

Table 2 presents the causes and sites of injury. In the 1st decade, although all body sites were affected, the abdomen and head/face were the most commonly injured, indicating the likely accidental nature of injuries in this age group. These were followed by injuries to the chest and upper limbs. In the 2nd and 3rd decades, the most common sites were the upper limbs and pelvis, while in the 4th and 5th decades, the chest and head were more frequently affected. Among females over 60, the lower limbs and chest were the primary sites of injury.

Table 3. Type of falling in different age groups

	1st decade	2nd decade	3rd decade	4th decade	5th decade	6th decade	More than 60	P value
FALL IN BATHROOM	2 (15.4)	1 (11.1)	1 (12.5)	2 (40)	3 (27.3)	3 (37.5)	15 (39.5)	P= .517
FALL FROM STAIRS	6 (46.2)	4 (44.4)	5 (62.5)	0 (0)	6 (54.5)	4 (50)	12 (31.6)	
FALL FROM HEIGHT	3 (23.1)	4 (44.4)	2 (25)	3 (60)	2 (18.2)	1 (12.5)	8 (21.1)	
FALL FROM BIKE	1 (7.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
FALL FROM BED	1 (7.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (7.9)	

N: number; %: percentage; X^2: Chi-square. P value was considered significant at P < .004.

Table 3 shows the types of falls across different age groups. Falls from stairs accounted for the highest proportion (40.2%), followed by falls in bathrooms (29.3%). Among the 92 fall cases, the majority resulted from stairs (40.2%), bathrooms (29.3%), and heights (25.0%). Falls from beds (4.4%) and bicycles (1.1%) were relatively uncommon.

Table 4. socio-demographic characteristics of injured females

CHARACTERISTIC	FREQUENCY	PERCENTAGE
JOB		
• CHILD	38	18.6
• STUDENT	39	19.1
• EMPLOYEE	7	3.4
• HOUSEWIFE	103	50.5
• UNEMPLOYED	4	2.0
• WORKER	13	6.4
MARITAL STATUS		
• SINGLE	37	24.0
• MARRIED	115	74.7
• DIVORCED	2	1.3
RESIDENCE		
• RURAL	93	45.6
• URBAN	111	54.4

Table 4 presents the socio-demographic characteristics of injured females attending the Emergency Room at New Damietta Hospital. The majority were housewives (50.5%), followed by students (19.1%) and children (18.6%). Most of the injured females were married (74.7%). A slightly higher percentage resided in urban areas (54.4%) compared to rural areas (45.6%).

4. Discussion

The study demonstrates a bimodal age distribution of female injuries, with two prominent peaks: one among girls under 10 years old and another in women over 60. Young girls are particularly vulnerable due to developmental immaturity and dependence on caregivers, frequently sustaining injuries such as falls, scalds, and domestic burns. This trend aligns with pediatric trauma literature, which shows high injury rates during early childhood.[4] Scald injuries, in particular, are prevalent among toddlers, whose curiosity and developing mobility

often outpace their ability to perceive danger within household environments.[5]

Among the elderly female population, physical frailty, chronic illnesses such as stroke and osteoporosis, and impaired balance substantially increase the risk of falls, often resulting in serious trauma such as fractures or head injuries. These findings are consistent with both Egyptian and global studies, which show fall-related injuries to be significantly associated with stroke, dizziness, multiple comorbidities, and housebound status in women aged ≥70.[6-9]

Adolescents and women in early adulthood (20s–30s) also exhibited elevated injury rates. This may be attributed to increased exposure to educational and occupational environments, greater mobility, and heightened vulnerability to gender-based and intimate partner violence—factors that are well documented in trauma and violence research.[10-15]

Young women, particularly those in service or informal jobs, also face occupational hazards and increased exposure to workplace harassment[16]. A prior history of physical or sexual violence during adolescence further raises the risk of injury in this age group.[11,13,15]

Middle-aged women typically experienced moderate levels of injury. Common causes included caregiving-related accidents, household duties, occupational tasks, and road traffic incidents—particularly as pedestrians—echoing global injury surveillance trends among adult females.[17,18]

Injury patterns varied by age group. Falls predominated among elderly women and constituted a major share of emergency presentations.[6-8] In contrast, burns and scalds were most prevalent in young children, highlighting the dangers of household environments when proper supervision is lacking.[5] Fractures increased with age, particularly due to bone fragility in older women.[4,9]

Head and facial trauma were commonly seen in children and young adults, often resulting from falls, accidents, or abuse.[10,19] Upper limb injuries occurred across all age groups, peaking during adolescence due to school and play activities.[19] Conversely, chest and pelvic injuries were more frequent in the elderly, likely resulting from severe falls or underlying comorbidities.[9,17]

Injury severity correlated strongly with age. Children generally sustained milder injuries requiring minimal intervention. In contrast, women over 60 had significantly higher rates of severe trauma necessitating hospitalization, likely due to physiological decline and comorbidities such as hypertension and osteoporosis.[6-9] Middle-aged women also experienced increased injury severity, often related to traffic accidents, domestic violence, or workplace hazards.[12-14]

Demographic characteristics revealed a predominance of injured housewives, reflecting the injury risks inherent in household tasks such as cooking and caregiving.[6] Children and students also comprised a significant portion of cases due to play-related and school incidents.[4,19] Employed women represented a smaller share, possibly due to lower workforce participation or safer work environments.[16]

Marital and residential factors influenced injury risk. Married women, especially housewives, showed elevated injury rates, possibly due to prolonged household exposure and caregiving demands. Urban women also experienced slightly higher injury incidence, likely reflecting greater mobility and better access to health services[12], [15].

Lower limb injuries—including fractures and burns—were common in older women, while head and facial trauma were more typical in younger females and often resulted from violence or burns.[5,7,9,12,14]

Fall mechanisms varied by age: bathroom falls were more common among elderly women due to impaired balance and wet surfaces; stair- or height-related falls affected younger and middle-aged women, often during domestic or occupational activities. Bed-related falls were seen in both the very young and elderly, reflecting dependence and limited mobility.[7-9,20]

4. Conclusion

The study found that injury rates were highest among females aged 0–9 and over 60. Younger females mostly sustained mild injuries, whereas older females experienced more severe harm. Housewives and urban residents were the most affected groups. The age-related differences in injury severity have important legal implications, emphasizing the need for targeted prevention efforts and accurate medicolegal documentation.

Disclosure

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Authorship

All authors have a substantial contribution to the article

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