

Epidemiological Characteristics of Falls from the National Injury Surveillance System — China, 2019–2022

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ABSTRACT

Introduction: This study describes and analyzes the distribution of fall cases documented in the National Injury Surveillance System (NISS) from 2019 to 2022.

Methods: Fall data from the NISS (2019–2022) were descriptively analyzed by gender and age.

Results: The NISS in China reported 2,324,577 fall cases from 2019 to 2022. Falls mostly happened at home (39.41%). Leisure activities (39.40%) were the most common cause of falls. Among these cases, 45.22% caused bruises, 31.57% lower limb injuries, while a substantial 73.41% constituted mild injuries. Age-related epidemiological patterns of falls revealed distinct trends. Among 0–9-year-olds, falls predominantly occurred at home (56.71%), with high head injury rates, particularly in infants (72.64%). Adolescents (10–19 years old) were prone to falls in school and school-related areas (37.12%) and during sports activities (27.37%). Elderly individuals (>60 years old) experienced higher fracture rates (36.84%) and an age-dependent increase in head injuries and severe harm.

Conclusions: Falls are the most prevalent injury category, exhibiting distinct characteristics across age groups. To address this, tailored public health strategies and interventions are essential, particularly for children, adolescents, and adults aged 60 years and older. Effective early prevention and intervention methods are paramount for these high-risk fall populations.

Falls are events that occur when an individual inadvertently lands on the ground, floor, or a lower level (1). A significant public health concern, falls cause over 684,000 deaths globally each year, making them the second leading cause of unintentional injury deaths worldwide. Falls can also result in non-fatal

consequences, such as disability, functional impairment, and restricted activity, which cause a significant burden on families and societies in terms of disease and economic losses (2).

This study aims to analyze the epidemiological characteristics and influencing factors of fall injuries using data from the NISS between 2019 and 2022. The results will help identify key intervention areas and provide a scientific basis for fall prevention and control.

METHODS

Initiated in 2006, the hospital-based National Injury Surveillance System (NISS) provides extensive coverage across 31 provincial-level administrative divisions (PLADs). The NISS includes 300 monitoring hospitals across 100 monitoring sites, with 59 sites in urban areas and 41 in rural areas. This study analyzed fall case data collected by the NISS from 2019 to 2022. At each monitoring site hospital, medical doctors or nurses complete the National Injury Surveillance Report Card, which was developed by the China CDC. At each monitoring site, the CDC is responsible for collecting, entering, and regularly reporting injury surveillance data to the China CDC. Published articles have studied the NISS extensively, discussing its sampling methods, data quality, and other relevant information (3–4).

Statistical analyses were performed using SPSS software (version 26.0; SPSS Inc, Chicago, IL, USA). The National Center for Chronic and Noncommunicable Disease Control and Prevention, Chinese Center for Disease Control and Prevention, approved the use of NISS data for this study (ethical application grant number: 201502).

RESULTS

Between 2019 and 2022, NISS recorded 2,324,577 falls, comprising 1,345,181 males and 982,396

females. Of these, 1,685,880 occurred in urban areas and 638,697 in rural areas (urban-rural ratio: 1:0.38). Monitoring hospitals in the eastern region reported 1,257,024 cases (54.08%), while the central and western regions reported 16.52% and 29.40%, respectively. The average age was 36.88±24.32 years (males: 33.22±22.90 years; females: 41.87±25.28 years) (Table 1).

Falls occurred mainly during the daytime (06:00–17:59, 67.37%). The most common locations for falls were at home (39.41%), on the road/street (17.62%), and in public residential institutions (15.66%). Fall locations varied by age group. Falls in school and school-related areas were highest among individuals aged 10–19 years, followed by those at home. Leisure activities accounted for most falls (39.40%) but differed by age. Sports activities caused most falls (27.37%) among individuals aged 10–19 years, while falls at work were most common (22.87%) among those aged 40–49 years (Table 2).

For individuals aged 0–39 years, bruises (50.08%), sprains (21.16%), and fractures (12.93%) were the 3 most common fall-related injuries. Among those aged 40–69 years, the 3 most common injuries were bruises (40.90%), fractures (27.07%), and sprains (19.21%), while fractures (40.73%) were most common among those aged 70 years and older. Females (23.26%) had a higher proportion of fractures than males (19.07%). Lower limb injuries (31.57%) were the most common,

followed by head (26.34%), upper limb (21.30%), and torso (14.31%) injuries, accounting for 93.52% of all cases. The injured body parts varied by age group. Infants aged 0 years most frequently experienced head injuries (72.64%). Among those aged 60 years and older, the proportion of head injuries increased with age. Most fall cases were mild in severity (73.41%), with moderate and severe cases accounting for 24.69% and 1.90%, respectively. Severe cases increased with age. Most cases were discharged after treatment (83.85%), followed by hospitalization (13.23%) and observation (1.78%). The proportion of hospitalizations increased with age (Table 3).

DISCUSSION

This study conducted a comprehensive analysis of fall-related injuries across age groups in China from 2019 to 2022. Our findings indicated a higher incidence of falls among males than females and in urban versus rural settings. Most falls occurred in residential settings and during leisure activities, highlighting the need for targeted interventions in these areas. From 2019 to 2022, the NISS in China recorded 2,324,577 fall cases. Of these, 45.23% resulted in bruises, 31.57% involved lower limb injuries, and 73.41% were classified as mild injuries.

The age distribution of fall cases reveals that children, adolescents, and the elderly represent a larger

TABLE 1. Demographic characteristics of fall cases in the NISS of China, 2019–2022.

Age group (years)	Sex		Urban-rural		Geographical distribution			Total, <i>n</i> (%)
	Male, <i>n</i> (%)	Female, <i>n</i> (%)	Urban, <i>n</i> (%)	Rural, <i>n</i> (%)	Eastern, <i>n</i> (%)	Central, <i>n</i> (%)	Western, <i>n</i> (%)	
0	6,561 (0.49)	5,043 (0.51)	10,015 (0.59)	1,589 (0.25)	7,438 (0.59)	885 (0.23)	3,281 (0.48)	11,604 (0.50)
1–9	265,678 (19.79)	153,763 (15.65)	308,197 (18.28)	111,244 (17.42)	225,830 (17.97)	64,279 (16.74)	129,332 (18.92)	419,441 (18.04)
10–19	202,591 (15.09)	81,868 (8.33)	200,243 (11.88)	84,216 (13.19)	142,459 (11.33)	49,626 (12.92)	92,374 (13.51)	284,459 (12.24)
20–29	152,608 (11.37)	90,633 (9.23)	197,711 (11.73)	45,530 (7.13)	146,116 (11.62)	27,905 (7.27)	69,220 (10.13)	243,241 (10.46)
30–39	189,703 (14.13)	114,034 (11.61)	236,775 (14.04)	66,962 (10.48)	184,314 (14.66)	37,994 (9.89)	81,429 (11.91)	303,737 (13.07)
40–49	160,800 (11.98)	110,083 (11.21)	195,999 (11.63)	74,884 (11.72)	144,811 (11.52)	40,636 (10.58)	85,436 (12.50)	270,883 (11.65)
50–59	173,654 (12.94)	153,500 (15.63)	225,183 (13.36)	101,971 (15.97)	165,868 (13.20)	62,214 (16.20)	99,072 (14.49)	327,154 (14.07)
60–69	95,952 (7.15)	122,073 (12.43)	145,297 (8.62)	72,728 (11.39)	115,143 (9.16)	44,901 (11.69)	57,981 (8.48)	218,025 (9.38)
70–79	56,803 (4.23)	86,270 (8.78)	93,232 (5.53)	49,841 (7.80)	70,764 (5.63)	33,138 (8.63)	39,171 (5.73)	143,073 (6.15)
80–102	37,831 (2.82)	65,129 (6.63)	73,228 (4.34)	29,732 (4.66)	54,281 (4.32)	22,455 (5.85)	26,224 (3.84)	102,960 (4.43)
Total	1,342,181 (100.00)	982,396 (100.00)	1,685,880 (100.00)	638,697 (100.00)	1,257,024 (100.00)	384,033 (100.00)	683,520 (100.00)	2,324,577 (100.00)

Abbreviation: NISS=National Injury Surveillance System.

TABLE 2. Characteristics of time, sites, and activity for all fall cases in the NISS of China, 2019–2022.

Characteristics	Sex*		Age (years)*										Total, n (%)
	Male, n (%)	Female, n (%)	0, n (%)	1–9, n (%)	10–19, n (%)	20–29, n (%)	30–39, n (%)	40–49, n (%)	50–59, n (%)	60–69, n (%)	70–79, n (%)	80–102, n (%)	
Time													
00:00–05:59	142,443 (10.61)	97,619 (9.94)	1,370 (11.81)	31,195 (7.44)	26,071 (9.17)	35,609 (14.64)	38,710 (12.74)	29,909 (11.04)	32,393 (9.90)	20,191 (9.26)	13,597 (9.50)	11,017 (10.70)	240,062 (10.33)
06:00–11:59	435,416 (32.44)	350,971 (35.73)	3,051 (26.29)	106,624 (25.42)	78,219 (27.50)	71,138 (29.25)	101,685 (33.48)	100,928 (37.26)	130,410 (39.86)	91,712 (42.06)	61,138 (42.73)	41,482 (40.29)	786,387 (33.83)
12:00–17:59	457,843 (34.11)	321,823 (32.76)	3,659 (31.53)	148,036 (35.29)	109,466 (38.48)	77,043 (31.67)	95,839 (31.55)	88,123 (32.53)	107,784 (32.95)	70,242 (32.22)	46,075 (32.20)	33,399 (32.44)	779,666 (33.54)
18:00–23:59	306,479 (22.83)	211,983 (21.58)	3,524 (30.37)	133,586 (31.85)	70,703 (24.86)	59,451 (24.44)	67,503 (22.22)	51,923 (19.17)	56,567 (17.29)	35,880 (16.46)	22,263 (15.56)	17,062 (16.57)	518,462 (22.30)
Site													
Home	467,913 (34.86)	448,282 (45.63)	9,364 (80.70)	235,072 (56.04)	56,326 (19.80)	58,871 (24.20)	85,095 (28.02)	80,851 (29.85)	118,635 (36.26)	106,222 (48.72)	89,512 (62.56)	76,247 (74.05)	916,195 (39.41)
Public residential institution	212,005 (15.80)	151,982 (15.47)	1,585 (13.66)	73,497 (17.52)	39,610 (13.92)	44,890 (18.45)	52,660 (17.34)	42,716 (15.77)	48,227 (14.74)	31,244 (14.33)	18,445 (12.89)	11,113 (10.79)	363,987 (15.66)
School and school-related areas	151,946 (11.32)	79,259 (8.07)	219 (1.89)	60,124 (14.33)	105,579 (37.12)	20,088 (8.26)	13,050 (4.30)	10,089 (3.72)	10,537 (3.22)	6,410 (2.94)	3,282 (2.29)	1,827 (1.77)	231,205 (9.95)
Sports and athletics area	75,549 (5.63)	29,674 (3.02)	56 (0.48)	13,555 (3.23)	37,064 (13.03)	19,213 (7.90)	15,042 (4.95)	8,014 (2.96)	6,325 (1.93)	3,781 (1.73)	1,562 (1.09)	611 (0.59)	105,223 (4.53)
Road/street	231,428 (17.24)	178,227 (18.14)	267 (2.30)	28,909 (6.89)	38,453 (13.52)	61,827 (25.42)	74,642 (24.57)	61,539 (22.72)	68,456 (20.92)	44,012 (20.19)	21,215 (14.83)	10,335 (10.04)	409,655 (17.62)
Commercial and serve area	45,517 (3.39)	45,521 (4.63)	69 (0.59)	5,276 (1.26)	3,865 (1.36)	16,893 (6.94)	22,260 (7.33)	18,272 (6.75)	15,583 (4.76)	5,376 (2.47)	2,382 (1.66)	1,062 (1.03)	91,038 (3.92)
Industrial and construction area	119,875 (8.93)	20,528 (2.09)	10 (0.09)	329 (0.08)	1,375 (0.48)	17,738 (7.29)	34,642 (11.41)	38,465 (14.20)	39,959 (12.21)	6,729 (3.09)	886 (0.62)	270 (0.26)	140,403 (6.04)
Farm/farmland	27,851 (2.08)	21,771 (2.22)	7 (0.06)	435 (0.10)	468 (0.16)	1,454 (0.60)	3,787 (1.25)	8,597 (3.17)	16,757 (5.12)	12,532 (5.75)	4,779 (3.34)	806 (0.78)	49,622 (2.13)
Others	1,752 (0.13)	1,277 (0.13)	8 (0.07)	429 (0.10)	189 (0.07)	345 (0.14)	378 (0.12)	394 (0.15)	529 (0.16)	407 (0.19)	234 (0.16)	116 (0.11)	3,029 (0.13)
Unknown	8,345 (0.62)	5,875 (0.60)	19 (0.16)	1,815 (0.43)	1,530 (0.54)	1,922 (0.79)	2,181 (0.72)	1,946 (0.72)	2,146 (0.66)	1,312 (0.60)	776 (0.54)	573 (0.56)	14,220 (0.61)
Activity													
Work	173,419 (12.92)	65,097 (6.63)	0 (0.00)	33 (0.01)	2,271 (0.80)	32,729 (13.46)	57,898 (19.06)	61,957 (22.87)	64,373 (19.68)	15,566 (7.14)	3,101 (2.17)	588 (0.57)	238,516 (10.26)
Housework	118,253 (8.81)	152,710 (15.54)	106 (0.91)	6,245 (1.49)	8,011 (2.82)	18,457 (7.59)	32,707 (10.77)	38,802 (14.32)	62,899 (19.23)	53,291 (24.44)	34,068 (23.81)	16,377 (15.91)	270,963 (11.66)
Education activities	20,179 (1.50)	9,736 (0.99)	15 (0.13)	8,203 (1.96)	16,122 (5.67)	1,866 (0.77)	990 (0.33)	916 (0.34)	990 (0.30)	430 (0.20)	241 (0.17)	142 (0.14)	29,915 (1.29)
Sports activities	122,582 (9.13)	48,978 (4.99)	87 (0.75)	26,715 (6.37)	77,846 (27.37)	24,366 (10.02)	17,153 (5.65)	9,274 (3.42)	7,688 (2.35)	4,923 (2.26)	2,266 (1.58)	1,242 (1.21)	171,560 (7.38)
Leisure activities	528,982 (39.41)	386,953 (39.39)	6,334 (54.58)	262,462 (62.57)	112,378 (39.51)	92,725 (38.12)	105,902 (34.87)	81,468 (30.07)	95,224 (29.11)	72,802 (33.39)	48,652 (34.01)	37,988 (36.90)	915,935 (39.40)
Life activity	123,163 (9.18)	102,232 (10.41)	4,310 (37.14)	56,831 (13.55)	20,251 (7.12)	17,478 (7.19)	21,898 (7.21)	19,457 (7.18)	24,981 (7.64)	20,675 (9.48)	19,481 (13.62)	20,033 (19.46)	225,395 (9.70)
Driving/riding vehicles	59,095 (4.40)	41,921 (4.27)	53 (0.46)	4,257 (1.01)	9,874 (3.47)	16,494 (6.78)	19,161 (6.31)	17,186 (6.34)	19,053 (5.82)	10,476 (4.80)	3,562 (2.49)	900 (0.87)	101,016 (4.35)
Walking	170,647 (12.71)	156,769 (15.96)	402 (3.46)	42,593 (10.15)	32,841 (11.55)	35,706 (14.68)	43,664 (14.38)	37,608 (13.88)	46,180 (14.12)	35,643 (16.35)	29,162 (20.38)	23,617 (22.94)	327,416 (14.08)
Others	6,948 (0.52)	4,682 (0.48)	54 (0.47)	5,570 (1.33)	1,436 (0.50)	443 (0.18)	598 (0.20)	629 (0.23)	949 (0.29)	874 (0.40)	643 (0.45)	434 (0.42)	11,630 (0.50)
Unknown	18,913 (1.41)	13,318 (1.36)	243 (2.09)	6,532 (1.56)	3,429 (1.21)	2,977 (1.22)	3,766 (1.24)	3,586 (1.32)	4,817 (1.47)	3,345 (1.53)	1,897 (1.33)	1,639 (1.59)	32,231 (1.39)
Total	1,342,181 (100.00)	982,396 (100.00)	11,604 (100.00)	419,441 (100.00)	284,459 (100.00)	243,241 (100.00)	303,737 (100.00)	270,883 (100.00)	327,154 (100.00)	218,025 (100.00)	143,073 (100.00)	102,960 (100.00)	2,324,577 (100.00)

Abbreviation: NISS=National Injury Surveillance System.

* Differences in characteristics between genders and age groups were all statistically significant, all $P < 0.001$.

TABLE 3. Characteristics of the nature, part, and severity of injuries related to falls in the NISS of China, 2019–2022.

Characteristics	Sex*		Age (years)*										Total, n (%)
	Male, n (%)	Female, n (%)	0, n (%)	1–9, n (%)	10–19, n (%)	20–29, n (%)	30–39, n (%)	40–49, n (%)	50–59, n (%)	60–69, n (%)	70–79, n (%)	80–102, n (%)	
Nature of injury													
Fracture	255,945 (19.07)	228,458 (23.26)	713 (6.14)	41,962 (10.00)	40,836 (14.36)	29,580 (12.16)	50,156 (16.51)	59,437 (21.94)	90,761 (27.74)	70,738 (32.44)	54,872 (38.35)	45,348 (44.04)	484,403 (20.84)
Sprain	247,335 (18.43)	203,430 (20.71)	1,186 (10.22)	52,975 (12.63)	76,272 (26.81)	63,138 (25.96)	73,590 (24.23)	57,708 (21.30)	62,524 (19.11)	36,602 (16.79)	18,388 (12.85)	8,382 (8.14)	450,765 (19.39)
Sharps injury, bites and open wounds	156,441 (11.66)	84,049 (8.56)	931 (8.02)	74,204 (17.69)	22,496 (7.91)	24,850 (10.22)	29,890 (9.84)	24,584 (9.08)	26,034 (7.96)	17,443 (8.00)	10,917 (7.63)	9,141 (8.88)	240,490 (10.35)
Bruise	621,707 (46.32)	429,507 (43.72)	7,527 (64.87)	230,307 (54.91)	136,417 (47.96)	118,412 (48.68)	139,563 (45.95)	118,214 (43.64)	132,801 (40.59)	82,661 (37.91)	51,117 (35.73)	34,195 (33.21)	1,051,214 (45.22)
Burn	645 (0.05)	400 (0.04)	6 (0.05)	228 (0.05)	76 (0.03)	169 (0.07)	161 (0.05)	106 (0.04)	139 (0.04)	80 (0.04)	44 (0.03)	36 (0.03)	1,045 (0.04)
Concussion/Cerebral contusion	43,516 (3.24)	26,845 (2.73)	887 (7.64)	14,025 (3.34)	5,768 (2.03)	4,789 (1.97)	7,286 (2.40)	7,563 (2.79)	11,015 (3.37)	8,055 (3.69)	6,157 (4.30)	4,816 (4.68)	70,361 (3.03)
Organ system injury	5,100 (0.38)	2,013 (0.20)	19 (0.16)	749 (0.18)	573 (0.20)	627 (0.26)	994 (0.33)	1,255 (0.46)	1,428 (0.44)	776 (0.36)	432 (0.30)	260 (0.25)	7,113 (0.31)
Others	7,848 (0.58)	5,067 (0.52)	118 (1.02)	3,443 (0.82)	1,378 (0.48)	1,099 (0.45)	1,365 (0.45)	1,353 (0.50)	1,675 (0.51)	1,157 (0.53)	838 (0.59)	489 (0.47)	12,915 (0.56)
Unknown	3,644 (0.27)	2,627 (0.27)	217 (1.87)	1,548 (0.37)	643 (0.23)	577 (0.24)	732 (0.24)	663 (0.24)	777 (0.24)	513 (0.24)	308 (0.22)	293 (0.28)	6,271 (0.27)
Body part injured													
Head	384,798 (28.67)	227,560 (23.16)	8,429 (72.64)	230,709 (55.00)	59,413 (20.89)	49,434 (20.32)	59,703 (19.66)	52,596 (19.42)	59,296 (18.12)	39,548 (18.14)	28,871 (20.18)	24,359 (23.66)	612,358 (26.34)
Upper limbs	283,741 (21.14)	211,456 (21.52)	1,984 (17.10)	96,228 (22.94)	74,629 (26.24)	49,769 (20.46)	61,831 (20.36)	54,870 (20.26)	69,278 (21.18)	46,598 (21.37)	26,005 (18.18)	14,005 (13.60)	495,197 (21.30)
Lower limbs	405,169 (30.19)	328,755 (33.46)	366 (3.15)	60,896 (14.52)	115,544 (40.62)	98,614 (40.54)	113,446 (37.35)	92,441 (34.13)	105,058 (32.11)	67,395 (30.91)	43,996 (30.75)	36,168 (35.13)	733,924 (31.57)
Torso	179,198 (13.35)	153,506 (15.63)	221 (1.90)	13,629 (3.25)	20,056 (7.05)	27,168 (11.17)	46,584 (15.34)	50,546 (18.66)	69,549 (21.26)	49,592 (22.75)	34,062 (23.81)	21,297 (20.68)	332,704 (14.31)
Multiple parts	68,494 (5.10)	48,946 (4.98)	300 (2.59)	8,771 (2.09)	11,216 (3.94)	15,180 (6.24)	18,402 (6.06)	16,883 (6.23)	19,856 (6.07)	12,405 (5.69)	8,464 (5.92)	5,963 (5.79)	117,440 (5.05)
Whole body	5,100 (0.38)	3,045 (0.31)	27 (0.23)	683 (0.16)	781 (0.27)	953 (0.39)	1,140 (0.38)	1,197 (0.44)	1,500 (0.46)	874 (0.40)	599 (0.42)	391 (0.38)	8,145 (0.35)
Others	14,002 (1.04)	7,996 (0.81)	223 (1.92)	7,651 (1.82)	2,534 (0.89)	1,881 (0.77)	2,296 (0.76)	2,076 (0.77)	2,296 (0.70)	1,412 (0.65)	946 (0.66)	683 (0.66)	21,998 (0.95)
Unknown	1,679 (0.13)	1,132 (0.12)	54 (0.47)	874 (0.21)	286 (0.10)	242 (0.10)	335 (0.11)	274 (0.10)	321 (0.10)	201 (0.09)	130 (0.09)	94 (0.09)	2,811 (0.12)
Severity													
Mild	994,590 (74.10)	711,856 (72.46)	9,972 (85.94)	347,052 (82.74)	228,676 (80.39)	196,909 (80.95)	234,505 (77.21)	194,578 (71.83)	220,350 (67.35)	139,389 (63.93)	81,896 (57.24)	53,119 (51.59)	1,706,446 (73.41)
Moderate	320,990 (23.92)	252,981 (25.75)	1,530 (13.19)	70,113 (16.72)	53,529 (18.82)	43,753 (17.99)	64,762 (21.32)	70,361 (25.97)	97,921 (29.93)	72,037 (33.04)	55,408 (38.73)	44,557 (43.28)	573,971 (24.69)
Severe	26,601 (1.98)	17,559 (1.79)	102 (0.88)	2,276 (0.54)	2,254 (0.79)	2,579 (1.06)	4,470 (1.47)	5,944 (2.19)	8,883 (2.72)	6,599 (3.03)	5,769 (4.03)	5,284 (5.13)	44,160 (1.90)
Disposition													
Discharged after treatment	1,131,162 (84.28)	818,098 (83.28)	10,778 (92.88)	391,909 (93.44)	259,563 (91.25)	220,497 (90.65)	266,172 (87.63)	222,532 (82.15)	255,294 (78.03)	162,984 (74.75)	96,564 (67.49)	62,967 (61.16)	1,949,260 (83.85)
Observed	24,281 (1.81)	17,021 (1.73)	233 (2.01)	6,031 (1.44)	4,290 (1.51)	3,695 (1.52)	5,037 (1.66)	4,904 (1.81)	6,446 (1.97)	4,310 (1.98)	3,372 (2.36)	2,984 (2.90)	41,302 (1.78)
Transferred	9,352 (0.70)	6,860 (0.70)	39 (0.34)	2,241 (0.53)	1,411 (0.50)	732 (0.30)	1,213 (0.40)	1,916 (0.71)	2,844 (0.87)	2,301 (1.06)	1,848 (1.29)	1,667 (1.62)	16,212 (0.70)
Admitted	171,543 (12.78)	136,092 (13.85)	531 (4.58)	17,939 (4.28)	18,150 (6.38)	17,596 (7.23)	30,207 (9.95)	40,326 (14.89)	60,879 (18.61)	47,163 (21.63)	40,366 (28.21)	34,478 (33.49)	307,635 (13.23)
Dead	822 (0.06)	361 (0.04)	0 (0.00)	75 (0.02)	50 (0.02)	48 (0.02)	112 (0.04)	180 (0.07)	257 (0.08)	161 (0.07)	136 (0.10)	164 (0.16)	1,183 (0.05)
Others	5,021 (0.37)	3,964 (0.40)	23 (0.20)	1,246 (0.30)	995 (0.35)	673 (0.28)	996 (0.33)	1,025 (0.38)	1,434 (0.44)	1,106 (0.51)	787 (0.55)	700 (0.68)	8,985 (0.39)
Total	1,342,181 (100.00)	982,396 (100.00)	11,604 (100.00)	419,441 (100.00)	284,459 (100.00)	243,241 (100.00)	303,737 (100.00)	270,883 (100.00)	327,154 (100.00)	218,025 (100.00)	143,073 (100.00)	102,960 (100.00)	2,324,577 (100.00)

Abbreviation: NISS=National Injury Surveillance System.

* Differences in characteristics between genders and age groups were all statistically significant, all $P<0.001$.

proportion of patients seeking medical attention for falls. The associated fall characteristics are distinct and merit further discussion from a public health perspective. Research indicates that children and adolescents, as well as the elderly, experience the highest disease burden and fall-related injuries (2). Notably, among children and adolescents, infants exhibit a particularly high incidence rate of falls. Elderly individuals aged 60 and above face the highest risk of death or serious injury from falls, a risk that escalates with age (2). This discussion will primarily focus on the fall prevalence characteristics within these two groups and provide targeted recommendations. Targeted fall prevention policies and safety awareness strategies are crucial to mitigate the occurrence of falls.

This research demonstrated that children under 10 years old were more vulnerable to household falls, often resulting in head trauma, particularly in infants aged <1 year. These findings are consistent with previous studies emphasizing the urgent need for fall prevention measures in young children (5). Substantial evidence supports the effectiveness of home safety interventions in mitigating the risk of pediatric falls. Therefore, caregivers must remain vigilant and proactively identify and address potential safety hazards at home. By enhancing their knowledge of fall prevention strategies, caregivers can create a safer environment for children to play and develop. Given the inherently weaker upper extremity strength of infants (6), vigilant supervision and increased precautions are crucial to ensure their well-being. Such efforts can help reduce the incidence of fall-related injuries and promote the healthy development of infants and young children.

For individuals aged 10–19 years, falls occur predominantly in school and school-related settings, highlighting the need for improved fall prevention strategies in these environments. The high incidence of falls during physical activities, notably higher than in other age groups, emphasizes this dynamic. While some sports inherently carry a risk of falls, adolescents should be encouraged to participate in active sports and leisure activities as part of a healthy lifestyle, as sedentary behaviors increase injury susceptibility compared to regular physical activity (7–8). Ensuring adolescent safety during physical activity is crucial. The prevalence of lower limb injuries in this population, likely due to increased physical activity and sports participation, underscores the importance of implementing measures to mitigate fall-related hazards in these settings. Further research is needed to identify

associated risk factors and develop interventions to optimize school environments, strengthen student safety protocols, and enhance safety education programs.

Falls are prevalent among individuals aged 60 years and above, particularly at home. Key environmental hazards contributing to falls in this population include trip obstacles, slick or uneven flooring, inadequate lighting, clutter, and the absence of handrails (2). This underscores the critical importance of enhancing home safety measures and implementing fall prevention strategies (9–10). Furthermore, age-related fractures are more prevalent among women due to osteoporosis, necessitating targeted prevention strategies for this demographic (11). The increased incidence of head injuries with advancing age, particularly among those with diminished physical capabilities, underscores the importance of implementing fall prevention interventions that prioritize head protection (2).

Although children, adolescents, and the elderly represent key cohorts for fall prevention and control efforts, other age groups must also be considered. Notably, the 20–39 age group exhibits a substantial incidence of falls, many of which occur on roads and streets, consistent with previous research (12–13). This trend may be attributable to the large size of this demographic group, whose members frequently engage in social activities that involve road traffic. Similarly, the prevalence of falls among individuals aged 40–59 remains consistent with overall trends. However, there is currently a lack of tailored interventions for fall prevention in this population (14). Nonetheless, because this group constitutes a large portion of the workforce, the consequences of falls in this demographic group cannot be overlooked and appropriate attention and intervention strategies must be given.

This study has limitations. Using data solely from the NISS system prevents a comprehensive picture of elderly injuries, as injury incidence is not included. Furthermore, inherent to the NISS case collection methodology is potential underreporting. Individuals with minor injuries may self-treat or avoid medical attention due to financial constraints, limited healthcare access, or other factors, underestimating elderly injury cases.

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