ORIGINAL ARTICLE

Improving health-care planning for fracture patients in Türkiye: insights from a nationwide study

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ABSTRACT

BACKGROUND: The distribution of fractures may vary according to age and gender. In a country like Türkiye, which has high population density and covers a large geographical area, it is important to understand the regional variations in fractures and identify the health institutions in which patients seek treatment to plan new health-care investments effectively. The objective of our study was to investigate the distribution of fractures across the seven regions of Türkiye considering age, gender, and the level of health institutions the patients visited.

METHODS: Between January 2021 and May 2023, the total number of fractures, locations of the fractures, patient age and gender, geographical regions, and levels of the health-care institutions to which the patients presented were examined through the e-Nabız personal health record system. Age groups were divided into pediatric (0–19 years), adult (20–64 years), and geriatric (≥65 years) categories. Geographical regions included the Marmara, Central Anatolia, Black Sea, Eastern Anatolia, Aegean, Mediterranean, and Southeastern Anatolia regions.

RESULTS: A total of 2,135,701 patients with 2,214,213 fractures were analyzed. Upper extremity fractures were the most common among all considered fracture groups (1,154,819 fractures, 52.2%). There were 643,547 fractures in the pediatric group, 1,191,364 fractures in the adult group, and 379,302 fractures in the geriatric group. While the total number of fractures was higher among men with 1,256,884 fractures (58.9%), the rate among women was higher in the geriatric group (67.2%). Geographically, the highest number of fractures was observed in the Marmara region (714,146 fractures), and 67.92% of all patients presented to secondary health-care institutions (1,500,780 fractures). The most commonly diagnosed fracture in the study population was distal radius fractures. The most common fracture in the geriatric group was femur fractures while distal radius fractures were the most common fractures in the adult and the pediatric groups.

CONCLUSION: By understanding the distribution of fractures in Türkiye based on fracture site, geographical region, age, and gender, it becomes possible to improve the planning of patient access to health-care services. In regions with limited health resources, a more successful resource distribution can be achieved by considering fracture distributions and age groups.

Keywords: Age; distribution; fracture; regions; Türkiye.

Cite this article as: Birinci Ş, Bingöl İ, Bakırcıoğlu S, Oral M, Yılmaz ET, Yaşar NE, Ata N, Ülgü MM, Bayram S, Dumlupınar E, Saygın Kamacı S. Improving health-care planning for fracture patients in Türkiye: insights from a nationwide study. Ulus Travma Acil Cerrahi Derg 2023;29:1184-1190.

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Ulus Travma Acil Cerrahi Derg 2023;29(10):1184-1190 DOI: 10.14744/tjtes.2023.01364 Submitted: 11.07.2023 Revised: 16.08.2023 Accepted: 25.08.2023

INTRODUCTION

Fractures can constitute significant public health issues and pose economic burdens across all age groups throughout the human lifespan. Previous studies have reported incidence rates of all fractures across all age groups ranging from 81 to 235/10,000 individuals, with men showing higher fracture rates.[1,2] However, the distribution of fractures varies further based on factors such as gender, age, and lifestyles in different geographical regions. Fracture types and their incidence rates demonstrate specific distributions throughout the human lifespan. For example, in epidemiological studies conducted in the United States, the lifetime risk of fragility or osteoporotic fractures in women, including those of the vertebrae, hips, or wrists, was estimated to be between 15.6% and 17.5%.[3] Nearly half of all women and one in five men will experience a fracture during their remaining lifetime after the age of 50.[4,5] Fractures in children are also common, accounting for up to 25% of all injuries in the pediatric age group.[6] Few studies have been conducted on the overall counts of fractures considering these parameters. Meanwhile, as a result of the increasing population, the global costs of fractures can be expected to increase over time.

To address these issues and provide comprehensive information on this major global public health concern, we utilized records from e-Nabız, the e-health database of the Turkish Ministry of Health, to determine the descriptive counts of fractures based on sex, age, and geographical region during the period from 2021 to 2023. Additionally, we investigated the relationships between those parameters and the level of health care at which the diagnosis was performed.

MATERIALS AND METHODS

Data Collection with the E-Nabız Database

The electronic health records of individuals of all ages who were admitted to government, private, and university health institutions were obtained using e-Nabız, the e-health database of the Turkish Ministry of Health.[7] The study was conducted according to the Declaration of Helsinki and received approval from the Turkish Ministry of Health with a waiver of informed consent for retrospective data analysis and the health information privacy law (ID: 95741342-020/27112019). The e-Nabız system is a nationwide personal health records system that provides 30 different services for treatment, prevention, and other health-related areas. It also stores all kinds of imaging records for patients. The number of e-Nabız users has risen in recent years, reaching 68 million active users by 2022 or 80% of the population of Türkiye.[7] A computerized review of medical records was conducted to determine all types of fractures among e-Nabız users admitted to healthcare facilities between January 2021 and May 2023 in Türkiye. The initial date of fracture diagnosis was recorded as the fracture date. Recurrent International Classification of Diseases (ICD) codes assigned within 6 months of the date of fracture diagnosis for the same patients were excluded.

Study Population

Information stored in the e-Nabız database between January 2021 and May 2023 was extracted. Patient data including age and gender, level of health care provided by the admitting hospital, fracture site, and geographical region were investigated. Fractures were classified into four groups according to ICD-10 codes including upper limb fractures, lower limb fractures, axial skeleton fractures, and craniofacial fractures (Table 1). Patients with multiple fractures diagnosed at the time of first admission were also recorded with ICD codes T02.1 through T02.9 and were categorized as having multiple fractures. Patients were further divided into three age groups as pediatric (0–19 years), adult (20–64 years), or geriatric (≥65 years). The most commonly diagnosed fracture codes were analyzed in whole population and age groups.

Distribution of fractures according to the specific geographical regions of Türkiye was also evaluated for the Marmara region, Central Anatolia region, Black Sea region, Eastern Anatolia region, Aegean region, Mediterranean region, and Southeastern Anatolia region. For all included patients, the health-care level at the time of first admission was divided into four groups: primary health care, secondary health care (including government hospitals and government training hospitals), university hospitals, and private hospitals.

Statistical Analysis

IBM SPSS Statistics 25 (IBM Corp., Armonk, NY, USA) was used in this study for the analysis of all data. Frequency and percentage statistics were used for descriptive measures, while chi-square (Pearson) tests were used for categorical variables.

Table 1. Fracture classification and ICD codes

Fracture type	ICD codes
ULF	S42.0–S42.9
	S52.0–S52.9
	S62.0–S 62.9
LLF	S72.0–S72.9
	S82.0–S82.9
	S92.0–S92.9
ASF	
Vertebrae	S12.0-S12.9, S22.0/S22.1, S32.0
Rib, sternum	S22.2–S22.4
Pelvic site	S32.1–S32.8
CFF	S02.0–S02.9

ULF: Upper limb fractures; LLF: Lower limb fractures; ASF: Axial skeleton fractures; CFF: Craniofacial fractures; ICD: International Classification of Diseases.

RESULTS

Fractures According to Sex, Age, and Anatomical Location

In the time interval of 29 months, a total of 2,214,213 fractures of 2,135,701 patients were extracted from the e-Nabız system. Among these cases, 883,695 fractures were diagnosed in 2021, while 945,226 were diagnosed in 2022 and 385,292 were diagnosed in 2023 between January and May. Overall, the most common fracture site was the upper extremities (1,154,819 fractures, 52.2%) (Table 2). The total fracture count and all types of fractures were also examined according to age groups. While 643,547 fractures were observed among pediatric patients (0–19 years) in the time interval of 29 months, 1,191,364 fractures were seen among adult patients (20–64 years) and 379,302 were seen among elderly patients (≥65 years) (Table 3). While a majority of the fractures in the elderly patient group were seen in women, more fractures were seen in male patients in the adult and pediatric groups (Table 4).

The most commonly diagnosed fracture in the study population was distal radius fractures (367,768 fractures), followed by finger fractures (275,642 fractures) and nasal bone fractures (138,274 fractures). The most commonly diagnosed fractures were femur fractures (102,858 fractures) and distal radius fractures (55,290 fractures) in geriatric population, finger fractures (170,004 fractures) and distal radius fractures (143,374 fractures) in adult population, distal radius fractures (169,502 fractures) and finger fractures (92,733 fractures) in pediatric population. Table 5 demonstrates the most commonly diagnosed fracture codes.

Fractures According to Geographical Regions and Health-care Levels

For 4,645 fractures, information was not available regarding the level of health care at which the patient first presented. Excluding those cases, hospital admission was analyzed regarding the level of health care and it was found that 22,608 (1.02%) fractures were presented at the primary health-care level, 1,500,780 (67.92%) were presented at the secondary

Table 2. Fracture types by years

	All Fractures (%)	Craniofacial (%)	Axial Skeleton (%)	Upper Limb (%)	Lower Limb (%)
Year, n (%)					
2021	883,695 (100)	67,024 (7.6)	95,385 (10.8)	461,235 (52.2)	260,051 (29.4)
2022	945,226 (100)	75,865 (8)	99,197 (10.5)	495,300 (52.4)	274,864 (29.1)
2023	385,292 (100)	32,621 (8.5)	40,385 (10.5)	198,284 (51.5)	114,002 (29.6)
Total, n	2,214,213 (100)	175,510 (7.9)	234,967 (10.6)	1,154,819 (52.2)	648,917 (29.3)

Table 3. Relationships between age groups and fracture sites (January 2021 to May 2023)

	All Fractures (%)	Craniofacial (%)	Axial Skeleton (%)	Upper Limb (%)	Lower Limb (%)
Age Groups					
0–19 years					
Total, n	643,547	54,797 (8.5)	10,391 (1.6)	453,655 (70.5)	124,704 (19.4)
20–64 years					
Total, n	1,191,364	105,606 (8.9)	144,081 (12.1)	570,834 (47.9)	370,843 (31.1)
≥65 years					
Total, n	379,302	15,107 (4)	80,495 (21.2)	130,330 (34.4)	153,370 (40.4)

Table 4. Fracture counts according to gender and age groups (January 2021 to May 2023)

	0–19 years (%)	20–64 years (%)	≥65 years (%)	Total (%)
Sex, n (%)				
Male	421,950 (68.6)	712,599 (62.2)	122,335 (32.8)	1,256,884 (58.9)
Female	193,536 (31.4)	433,923 (37.8)	251,358 (67.2)	878,817 (41.1)
Total, n	615,486 (100)	1,146,522 (100)	373,693 (100)	2,135,701 (100)

Table 5. 15 most common diagnosed fracture codes in whole population and age groups between January 2021 and May 2023.

Whole Population			Geriatric (>65 years)			Adult (20-64 years)			Pediatric (<19 years)		
Number	ICD-10 code		Number	ICD-10 code		Number	ICD-10 code		Number	ICD-10 code	
367.768	S52.5	Lower end radius fracture	55.290	S52.5	Lower end radius fracture	170.004	S62.6	Fracture of unspecified finger	169.502	S52.5	Lower end radius fracture
275.642	S62.6	Fracture of unspecified finger	54.635	S72.0	Fracture of head and neck femur	143.374	S52.5	Lower end radius fracture	92.733	S62.6	Fracture of unspecified finger
138.274	S02.2	Fracture of nasal bones	48.223	S72	Femur fracture	90.586	S62.3	Fracture of unspecified metacarpal bone	47.938	S42.4	Fracture of lower end of humerus
132.861	S62.3	Fracture unspecified metacarpal bone	36.404	S32.0	Lumbar vertebra fracture	84.074	S92.3	Metatarsal fracture	44.641	S02.2	Fracture of nasal bones
127.733	S92.3	Metatarsal fracture	27.782	S42.2	Upper end humerus fracture	83.272	S02.2	Fracture of nasal bones	36.943	S62.3	Fracture of unspecified metacarpal bone
88.594	S82.6	Fracture of lateral malleolus	19.158	S72.9	Unspecified fracture of femur	60.697	S82.6	Fracture of lateral malleolus	35.851	S42.0	Fracture of clavicle
84.435	S62	Fracture at wrist and hand level	17.512	S72.1	Pertrochanteric fracture	50.233	S62	Fracture at wrist and hand level	30.771	S92.3	Metatarsal fracture
82.716	S32.0	Fracture of lumbar vertebra	17.079	S22.3	Fracture of one rib	43.932	S32.0	Fracture of lumbar vertebra	29.386	S52	Fracture of forearm
79.047	S72	Femur fracture	13.124	S62.6	Fracture of unspecified finger	43.545	S22.3	Fracture of one rib	27.434	S62	Fracture at wrist and hand level
77.770	S42.2	Upper end humerus fracture	13.010	S92.3	Metatarsal fracture	42.171	S92.5	Fracture of lesser toe(s)	17.729	S82.2	Fracture of shaft of tibia
72.527	S72.0	Fracture of head and neck femur	12.730	S82.6	Fracture of lateral malleolus	36.327	S42.2	Upper end humerus fracture	17.556	S82.3	Fracture of lower end of tibia
67.516	S42.0	Fracture of clavicle	10.766	S22.0	Fracture of thoracic vertebra	32.326	S82.3	Fracture of lower end of tibia	15.448	S52.4	Fracture of shafts of both ulna and radius
65.462	S42.4	Fracture of lower end of humerus	10.446	S02.2	Fracture of nasal bones	28.630	S52.1	Fracture of upper end of radius	15.33	S82.6	Fracture of lateral malleolus
62.516	S22.3	Fracture of one rib	7.368	T08	Fracture of spine, level unspecified	27.766	S82.2	Fracture of shaft of tibia	13.825	S42.2	Fracture of upper end of humerus
58.268	S92.5	Fracture of lesser toe(s)	6.830	S62	Fracture at wrist and hand level	25.999	S42.0	Fracture of clavicle	13.411	S52.6	Fracture of lower end of both ulna and radius

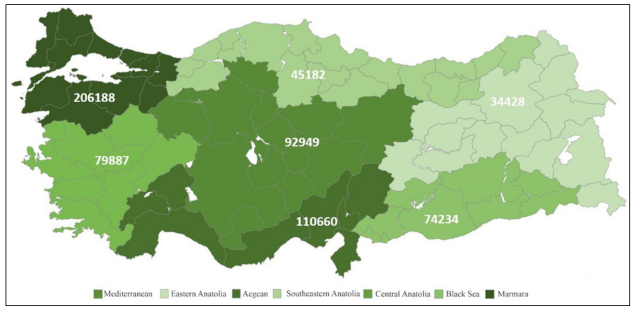

Figure 1. Number of fractures in the pediatric age group on a regional basis

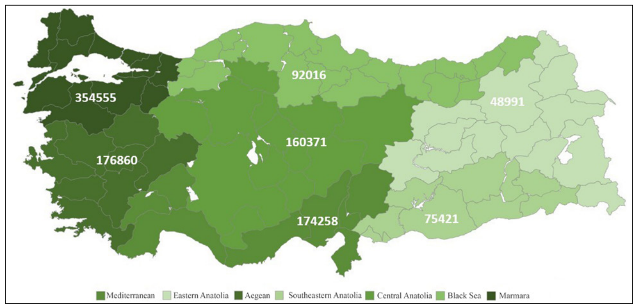

Figure 2. Number of fractures in the adult age group on a regional basis

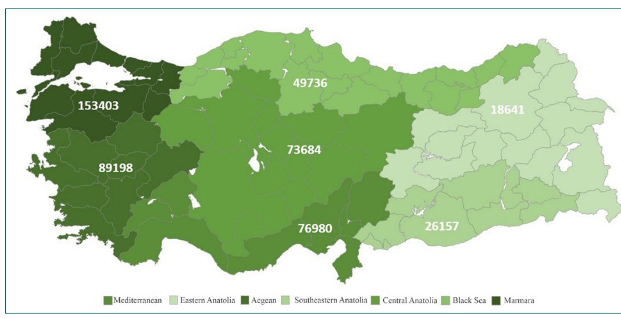

Figure 3. Number of fractures in the geriatric age group on a regional basis

health-care level, 129,624 (5.87%) were presented to university hospitals, and 556,646 (25.19%) were presented to private hospitals. Hospital admissions according to health-care levels and age groups are presented in Table 6. By geographic distribution, the most fracture cases were treated in the Marmara region, respectively followed by the Mediterranean, Aegean, Central Anatolia, Black Sea, Southeastern Anatolia, and Eastern Anatolia regions (Table 7). There were also 229,882 fracture records from polytrauma patients, which were not included in the analysis of the present study. The distributions of fracture numbers according to different age groups by regions are shown in Figures 1-3.

DISCUSSION

The present study investigated the distribution of fractures among a total of 2,214,213 fractures treated in Türkiye across different geographical regions in 2021-2023. The health-care level of the admitting health-care institution was also docu-

Table 6. Relationships between age groups and health-care admission levels (January 2021 to May 2023)

	All Fractures (%)	Craniofacial (%)	Axial Skeleton (%)	Upper Limb (%)	Lower Limb (%)
Age Groups					
0–19 years					
Health-care level, n (%)					
Primary	9111 (1.42)	399 (0.73)	65 (0.63)	6389 (1.41)	2258 (1.82)
Secondary	453,716 (70.68)	30,602 (56.07)	4173 (40.2)	333,599 (73.72)	85,342 (68.6)
Private	147,754 (23.02)	18,871 (34.57)	5280 (50.86)	93,368 (20.63)	30,235 (24.3)
University	31,311 (4.88)	4711 (8.63)	863 (8.31)	19,168 (4.24)	6569 (5.28)
Total, n	641,892	54,583	10,381	452,524	124,404
20–64 years					
Health-care level, n (%)					
Primary	11,352 (0.95)	778 (0.74)	1089 (0.76)	5387 (0.95)	4098 (1.11)
Secondary	791,153 (66.54)	64,378 (61.1)	77,612 (53.92)	397,871 (69.85)	251,292 (67.92)
Private	311,491 (26.2)	29,259 (27.77)	54,234 (37.68)	135,237 (23.74)	92,761 (25.07)
University	74,926 (6.3)	10,956 (10.4)	10,996 (7.64)	31,127 (5.46)	21,847 (5.9)
Total, n	1,188,922	105,371	143,931	569,622	369,998
≥65 years					
Health-care level, n (%)					
Primary	2145 (0.57)	30 (0.2)	466 (0.58)	495 (0.38)	1154 (0.75)
Secondary	255,911 (67.55)	9061 (60.03)	44,014 (54.74)	91,665 (70.43)	111,171 (72.57)
Private	97,401 (25.71)	4362 (28.9)	30,983 (38.53)	31,928 (24.53)	30,128 (19.67)
University	23,387 (6.17)	1642 (10.88)	4944 (6.15)	6066 (4.66)	10,735 (7.01)
Total, n	378,844	15,095	80,407	130,154	153,188

Table 7. Fracture types according to geographical regions (January 2021 to May 2023)

	All Fractures (%)	Craniofacial (%)	Axial Skeleton (%)	Upper Limb (%)	Lower Limb (%)
Regions, n (%)					
Mediterranean	361,898 (100)	22,505 (6.2)	37,285 (10.3)	194,015 (53.6)	108,093 (29.9)
Eastern Anatolia	102,060 (100)	13,621 (13.3)	9524 (9.3)	52,679 (51.6)	26,236 (25.7)
Aegean	345,945 (100)	27,360 (7.9)	44,344 (12.8)	166,298 (48.1)	107,943 (31.2)
Southeastern Anatolia	175,812 (100)	27,231 (15.5)	14,695 (8.4)	93,414 (53.1)	40,472 (23)
Central Anatolia	327,004 (100)	27,067 (8.3)	39,695 (12.1)	164,775 (50.4)	95,467 (29.2)
Black Sea	186,934 (100)	13,281 (7.1)	25,614 (13.7)	92,282 (49.4)	55,757 (29.8)
Marmara	714,146 (100)	44,341 (6.2)	63,773 (8.9)	391,185 (54.8)	214,847 (30.1)
Total, n	2,213,799	175,406	234,930	1,154,648	648,815

mented in each case. The findings of this study reveal the patterns and variations of fractures in Türkiye, offering valuable insights for public health interventions and resource allocation. To the best of our knowledge, this is the largest study to date investigating the geographic and demographic distributions of fractures and health-care admission levels.

Many studies with smaller cohorts have been published. Curtis et al. investigated the age- and sex-specific fracture incidence rates in patients older than 18 years. To do so, they used electronic health records that covered approximately 7% of the population of the UK.[8] Their study showed a bimodal distribution of fracture incidence in terms of age. The present study, on the other hand, covers 80% of the Turkish population, which accounts for approximately 68/80 million users of

the national health system and includes all age groups. Fractures were seen most often in the adult age group, followed by the pediatric and geriatric age groups, respectively. This can be attributed to the fact that Türkiye is a country with a relatively young population.[9] The proportion of the population in the age group of 15–64 years, defined as working age, increased over the years to reach 67.9% in 2021, with 22.4% of the population categorized as children and 9.7% as elderly.

According to an analysis of 10-year nationwide adult-geriatric fracture study from Germany revealed that hip fractures and distal radius fractures were the most commonly encountered fracture types with increasing incidence in aging population.[10] Our findings were parallel to this study. Hand and wrist fractures were the most commonly encountered fractures in whole Turkish population. This finding is also consistent with a recent Swedish nationwide registry study including 37,266 adult patients. Holtenius et al. revealed that hand and wrist fractures constitute 28% of all upper extremity injuries.[11] Upper extremity fractures were the most commonly encountered fracture types in pediatric population. This result was parallel to a nationwide study conducted by Naranje et al. from the United States.[12] Our analysis indicated that the incidence of fracture types changes with aging and specific fracture types are more common different age groups.

The findings of the present study also reveal gender differences in fracture rates across different age groups, which is consistent with the literature. In both the pediatric and adult age groups, male patients exhibited higher fracture rates. However, in the elderly group, female patients had a significantly higher rate of fractures. This disparity can be attributed to the prevalence of osteoporosis among elderly women, which is a well-known risk factor for specific fractures. Implementing strategies such as regular bone density screenings, promoting adequate calcium and vitamin D intake, and encouraging physical activity can play a key role in reducing the burden of fractures among elderly women in Türkiye.

As was previously shown in many studies, we also found differences in anatomical fracture sites in younger individuals in certain geographical regions, which suggests that geographic factors, lifestyle variations, or cultural differences may influence fracture risk and distribution patterns.[13-16] Our study has shown significant regional disparities in fracture counts, with higher rates observed in urban areas compared to rural areas. This finding may be related to several factors including differences in occupational hazards, access to recreational activities, or lifestyle choices.[5,17] Moreover, diversity in the health infrastructure and socioeconomic status between regions may also contribute to differences in fracture rates.

The effects of health-care levels on fracture management were also examined in the present study. Most of the included fractures were treated in secondary health-care facilities including government hospitals and government training hospitals. We also found that regions with higher levels of health care in metropolitan areas, such as the Marmara and Aegean regions, exhibited more comprehensive fracture management. These geographical regions offered better access to hospitals and specialized orthopedic services. In contrast, residents of rural areas such as those in the Southeastern and Eastern Anatolia regions may face challenges related to limited health-care resources, leading to potential errors in fracture diagnosis and management.

There are several limitations of the present register-based study. First of all, some information may have been unavailable or misclassified, and variations in coding between providers and institutions are difficult to handle. Moreover, information on potential confounding factors may have been missing, which is a common drawback of register-based studies. Considering the massive dataset of the present study, however, we believe that these drawbacks did not play a significant role in the analysis. This study has only presented the health-care levels at which the fractures were initially diagnosed; no specific information regarding treatment facilities or treatment methods such as surgical treatments versus reduction and casting was provided. Incidence and prevalence data of specific fracture types were not analyzed as this study aimed to present the geographic distribution of fracture cases in Türkiye. The most important strength of this study was the inclusion of the medical records of the entire Turkish population with very limited missing data.

CONCLUSION

This study has highlighted the distribution patterns of fractures within the Turkish population across geographical regions and health-care levels. A better understanding of these variations is crucial for developing effective strategies to improve fracture management and reduce the associated burden on individuals and the health-care system. Our findings can significantly contribute to public health strategies and resource allocation in Türkiye. Identifying higher fracture counts in areas with limited health-care resources or in regions with fractures among specific age groups can guide the implementation of targeted interventions. Furthermore, further research is needed to determine the specific risk factors associated with fractures in different geographical regions of Türkiye. This way, health-care management and resource allocation can be planned more effectively.

Ethics Committee Approval: This study was approved by the Ministry of Health, General Directorate of Health Information Systems Ethics Committee (Date: 27.11.2019, Decision No: 95741342-020).

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: Ş.B., İ.B., S.K.; Design: Ş.B., İ.B., S.K., S.B., N.E.Y.; Supervision: Ş.B., İ.B., N.E.Y., N.A.; Resource: N.A., İ.B.; Materials: N.A., M.M.U., Si.B., E.D.; Data collection and/or processing: N.A., M.M.U., Si.B., E.D.; Analysis and/or interpretation: N.A., M.M.U., Si.B., E.D.; Literature search: S.B., M.O., E.T.Y., S.K., N.E.Y.; Writing: S.B., M.O., E.T.Y., S.K.; Critical review: Ş.B., İ.B., S.K., E.T.Y., M.O.

Conflict of Interest: None declared.

Financial Disclosure: The author declared that this study has received no financial support.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Türkiye'deki kırık hastaları için sağlık hizmetleri planlamasının iyileştirilmesi: Ülke çapında bir araştırmadan içgörüler

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AMAÇ: Kırıkların dağılımı, yaşa ve cinsiyete göre değişebilmektedir. Türkiye gibi yüksek nüfus yoğunluğuna ve büyük bir yüzölçümüne sahip bir ülkede kırıkların bölgelere göre değişimi ve hastaların hangi sağlık kuruluşu basamağına başvurduğunu bilmek yeni sağlık yatırımlarının planlanmasında önemli olabilmektedir. Çalışmamızda, Türkiye'nin 7 bölgesine göre kırıkların yerinin, yaş, cinsiyet ve kaçıncı sağlık kuruluşu basamağına başvurulduğunun araştırılması amaçlanmıştır.

GEREÇ VE YÖNTEM: Ocak 2021 ve Mayıs 2023 tarihleri arasında kişisel sağlık kayıt sistemi olan E-nabız üzerinden toplam kırık sayıları, kırıkların yerleri, yaş, cinsiyet, coğrafik bölge ve başvurulan sağlık kuruluşunun basamağı incelendi. Yaş grupları pediatrik (0-19 yaş), erişkin (20-64 yaş) ve geriatrik (≥65 yaş) olarak ayrıldı. Coğrafi bölgeler, Marmara Bölgesi (MR), İç Anadolu Bölgesi (İAR), Karadeniz Bölgesi (KR), Doğu Anadolu Bölgesi (DAR), Ege Bölgesi (ER), Akdeniz Bölgesi (AR), Güneydoğu Anadolu Bölgesi (GAR) olarak belirlendi.

BULGULAR: Toplam 2.135.701 hastanın 2.214.213 kırığı çalışmaya dahil edildi. En sık üst ekstremite kırıkları görüldü. (1.154.819 kırık, %52.2) Pediatrik grupta 643.547, erişkin grupta 1.191.364, geriatrik grupta da 379.302 kırık görüldü. Toplam kırık sayısı erkeklerde 1.256.884 (%58.9) ile daha fazla iken, geriatrik grupta kadınların oranı daha fazlaydı (%67.2). Marmara bölgesi 714.146 kırık ile en sık kırık görülen bölgeydi. İkinci basamak sağlık kuruluşu başvuranların oranı %67.92'idi (1.500.780 kırık). Tüm populasyon genelinde en sık görülen kırıklar distal radius kırıkları ve parmak kırıkları olarak bulundu. Geriatrik hasta grubunda en sık görülen kırıklar femur kırıkları iken erişkin ve pediatrik yaş gruplarında en sık görülen kırık tipi distal radius kırıkları olarak bulundu.

SONUÇ: Türkiye'de kırık dağılımının kırık yerine, bölgelere, yaşa ve cinsiyete göre bilinmesi ile hastaların sağlık hizmetine ulaşımının planlanması daha iyi yapılabilir. Sınırlı sağlık kaynağı olan bölgelerde kırık dağılımları ve yaş grupları gözetilerek daha başarılı bir kaynak dağılımı sağlanabilir.

Anahtar sözcükler: Bölge; dağılım; kırık; Türkiye; yaş.

Ulus Travma Acil Cerrahi Derg 2023;29(10):1184-1190 DOI: 10.14744/tjtes.2023.01364