

# Orthopaedic injuries and the use of protective equipment in commercial motorcycle couriers during the Coronavirus Disease 2019 (COVID-19) pandemic: A single level 1 trauma center experience

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## ABSTRACT

**BACKGROUND:** The aim of our study is to analyze the orthopedic injuries and the use of protective equipment among commercial motorcycle couriers during the Coronavirus Disease 2019 (COVID-19) pandemic in a level I trauma center in Istanbul, to provide epidemiological data, and to serve as a baseline for future studies.

**METHODS:** Commercial motorcycle couriers involved in traffic accidents while working, and who were brought to the emergency department between April 2020 and April 2022, were included in our study. The protective equipment worn at the time of the accidents, including helmets, jackets, pants, gloves, and boots, were recorded. The orthopedic injuries and the applied treatments (both conservative and surgical) were documented, and injuries to other body regions and injury types were recorded in consultation with other medical departments. Additional data, including the duration of the driving license, the engine displacement of the motorcycle, any motorcyclist training, weather conditions, the estimated speed during the accident, and the time of the accident, were also noted.

**RESULTS:** A total of 255 commercial motorcycle couriers were included in the study. Most of the injuries (56.9%) involved major trauma, with the foot and ankle region being the most commonly affected body area (31.8%). Helmets were the most commonly used protective equipment (n=197, 77.3%), while motorcycle boots were the least used (n=54, 21.2%). Fifty participants (19.6%) did not use any protective equipment, including helmets, while 22.7% of commercial motorcycle couriers wore only helmets. Only 27 couriers wore full protective gear for motorcycle riding. There were 157 fractures, of which seven were open fractures (4.5%).

**CONCLUSION:** As wearing a helmet is mandatory when riding a motorcycle, the use of protective equipment other than helmets was relatively low, leading to a high prevalence of extremity injuries. Our study emphasizes the necessity of advanced motorcycle riding training for these professionals, raising awareness among motorcycle couriers about the importance of protective gear, and enhancing inspections through the implementation of legal regulations on this issue.

**Keywords:** Commercial motorcycle courier; fracture; soft tissue injury; protective clothing.

## INTRODUCTION

The Turkish Statistical Institute estimates that nearly 4.2 million motorcycles were registered with the General Directorate of Security in 2022.<sup>[1]</sup> In 2021, 64,479 motorcycle accidents

occurred in Türkiye; furthermore, 56,257 motorcyclists were injured, and 777 motorcyclists died in these accidents.<sup>[2]</sup> Traffic accidents involving motorcyclist fatalities accounted for 20.9% of all traffic accidents. Compared to other vehicle types, motorcyclists are more prone to death or injury following a traffic

Cite this article as: Ekinci M, Günen E, Ataoglu C, Yilmaz M. Orthopaedic injuries and the use of protective equipment in commercial motorcycle couriers during the Coronavirus Disease 2019 (COVID-19) pandemic: A single level 1 trauma center experience. *Ulus Travma Acil Cerrahi Derg* 2024;30:892-899.

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*Ulus Travma Acil Cerrahi Derg* 2024;30(12):892-899 DOI: 10.14744/tjtes.2024.26177

Submitted: 26.11.2023 Revised: 04.06.2024 Accepted: 10.10.2024 Published: 04.12.2024

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accident.<sup>[3,4]</sup> Their vulnerability can be explained by the limited contact of their two tires with the road, the lack of an outer body to reduce impact during an accident, and their small size.<sup>[5]</sup> Protective equipment such as helmets, jackets, gloves, and similar gear is used for shock and energy absorption, to protect the soft tissues and skin upon contact with the ground and road surfaces, and to reduce the severity of injuries during a traffic accident or fall.<sup>[6-8]</sup>

Some reasons for the widespread use of motorcycles for deliveries include their low road space usage, higher fuel efficiency, lower cost compared to other transport methods, ability to provide income for young unemployed individuals, high maneuverability in traffic jams, and ease of riding and parking in narrow streets.<sup>[9-12]</sup> Excessive increases in food consumption at home and online shopping during the Coronavirus Disease 2019 (COVID-19) pandemic have led to a dramatic rise in both the number and usage of commercial motorcycle couriers.<sup>[13]</sup>

Traffic accidents and injuries among commercial motorcyclists are believed to have increased due to the widespread use of motorcycles for food and shopping deliveries to homes.<sup>[14]</sup> Orthopedic injuries among commercial motorcycle couriers following accidents result in both lost workdays and additional healthcare costs, as well as permanent orthopedic disabilities.<sup>[13]</sup> The aim of our study is to analyze the orthopedic injuries and the use of protective equipment among commercial motorcycle couriers during the COVID-19 pandemic in a level I trauma center in Istanbul, to provide epidemiological data, and to serve as a baseline for future studies.

## MATERIALS AND METHODS

This study was approved by an institutional review board (ethics committee approval number: 93-2021) and conducted in accordance with the Declaration of Helsinki. Our study was performed in a level I trauma center in Istanbul between April 2020 and April 2022. Commercial motorcycle couriers who had been involved in traffic accidents while working and were brought to the emergency department were included in our study. Patients unwilling to participate in the study were excluded. We created a form to record the patients' medical and demographic data. The form was completed by a resident in orthopedics and traumatology or by an attending orthopedic surgeon who spoke to the patient directly or witnessed the accident in cases involving a loss of consciousness. All motorcycle accidents admitted to our institution were evaluated and examined by an orthopedic resident or attending surgeon. The use of protective equipment, including helmets, jackets, pants, gloves, and boots, was recorded on the form. Orthopedic injuries and applied treatments (both conservative and surgical) were documented, and injuries to other body regions were recorded with the consultation of other medical departments. The researchers recorded the duration of the motorcycle's driving license to assess riding experi-

ence, the engine displacement of the motorcycle, any motorcyclist training, weather conditions, the estimated speed during the accident, and the time of the accident.

The ages of the victims were categorized into the following groups: under 18, 18-25, 26-39, and over 40 years. The engine displacement of the motorcycle was categorized as less than 125 cm<sup>3</sup>, 125-250 cm<sup>3</sup>, or more than 250 cm<sup>3</sup>. The speed during the accident was categorized as 0-20, 21-40, 41-60, or over 61 km/h. The time of the accident was classified as 06:00-12:00, 12:00-18:00, 18:00-24:00, or 00:00-06:00. Motorcyclists' riding experience levels were categorized as less than 6 months, 6 months-2 years, or more than 2 years. The weather conditions during the accidents were classified as sunny, cloudy, rainy, or snowy. The air temperature at the time of the accident was noted and categorized as less than 10°C, 10-20°C, 20-30°C, and more than 30°C. The type of tire (winter or standard road) and its wear condition were asked to the motorcyclist and noted. The characteristics of the load carried were asked of the couriers and classified as food, household products, documents, water, or others. The type of road where the accident occurred was asked of the couriers, checked against the accident reports, and classified as highway, avenue, or street. The road condition was also asked and categorized as good, average, or poor. Daily working hours were asked and categorized as less than 4, 4-8, or more than 8 hours.

The Abbreviated Injury Scale (AIS) was used to assess the severity of the injury on a continuum from 1 (minor) to 6 (maximum). The Injury Severity Score (ISS) was calculated as the sum of the squares of the highest AIS scores from three body regions. The orthopedic injuries were classified as major and minor injuries. Minor trauma was defined as comprising injuries that did not require monitoring, soft tissue injuries, and fractures that could not be seen via X-rays or computed tomography. Major trauma was defined as encompassing fractures requiring surgery, cast immobilization, or monitoring for longer than 24 hours. Additional injuries, other than orthopedic injuries (such as head-neck, thoracic, and abdominal injuries), were also noted. The protection levels of the motorcyclist couriers were defined as full, partial, only-helmet, unprotected, unclassified, none, and not-classified. "Full equipment" was defined as wearing a helmet, jacket, pants, gloves, and boots. "Partial protection" referred to wearing a helmet and either a motorcycle jacket or pants. "Only helmet" was defined as using only a helmet as protective equipment. "Unprotected" referred to not using a helmet, jacket, or pants. "Unclassified" was defined as not fitting into any of the other four classifications (e.g., helmet and gloves or no helmet but wearing a jacket and gloves). "None" was defined as not using any protective equipment.

The patients' hospital and health council records were also evaluated to determine if they achieved full recovery or had permanent disabilities at the last follow-up.

**Table 1.** Demographic characteristics of the patients included in the study

	n	%
<b>Gender</b>		
Male	251	98
Female	4	2
<b>Age</b>		
<18	17	6.7
18-25	116	45.5
25-40	95	37.3
>40	27	10.6
<b>Time of the Accident</b>		
00:00-06:00	21	8.2
06:00-12:00	35	13.7
12:00-18:00	109	42.7
18:00-24:00	90	35.3
<b>Weather Condition During the Accident</b>		
Sunny	164	64.3
Cloudy	52	20.4
Rainy	38	14.9
Snowy	1	0.4
<b>Air Temperature During the Accident</b>		
<10°C	77	30.2
10-20°C	79	31.0
20-30°C	91	35.7
>30°C	8	3.1
<b>Driving License</b>		
Yes	191	74.9
No	64	25.1
<b>Engine Displacement of the Motorcycle</b>		
<125 cc	174	68.2
125-250 cc	54	21.2
>250 cc	27	10.6
<b>Working Experience of the Courier</b>		
<6 months	82	32.2
6 months-2 years	81	31.8
>2 years	92	36.1
<b>Estimated Driving Speed During the Crash (km/h)</b>		
0-20	61	23.9
21-40	105	41.2
42-60	62	24.3
>60	27	10.6
<b>Motorcycle Rider Training</b>		
Yes	66	25.9
No	189	74.1
<b>Performing Routine Maintenance of the Motorcycle</b>		
Yes	215	84.3
No	33	12.9
Unknown	7	2.7

<b>Type of Road</b>		
Highway	32	12.6
Avenue	96	37.6
Street	127	49.8
<b>Road Conditions</b>		
Good	183	71.8
Average	42	16.4
Poor	21	8.2
Unknown	9	3.6
<b>Characteristics of the Load Carried</b>		
Food	185	72.6
Household Products	30	11.7
Documents	7	2.7
Water	9	3.6
Others	8	3.1
Unknown	16	6.3
<b>Type of Tire</b>		
Winter	43	16.9
Standard Road	197	77.2
Unknown	15	5.9
<b>Wear Condition of Tire</b>		
Marked	23	9.0
None	217	85.1
Unknown	15	5.9
<b>Daily Working Hours</b>		
<4	31	12.1
4-8	165	64.8
>8	51	20.0
Unknown	8	3.1

We used IBM SPSS Statistics for Windows, Version 21.0 (IBM Corp., Armonk, NY) to analyze our data. Categorical variables were reported as frequencies with percentages. Numerical data are reported as means and standard deviations.

## RESULTS

Four hundred and nineteen motorcycle accidents were admitted to our emergency department during the study period. Two hundred and fifty-five commercial motorcycle couriers were included in the study. Most of the participants were male. Two hundred and fifty-one (98%) couriers were male, and only four patients (2%) were female. The mean age of the couriers was  $26.7 \pm 9.1$  years. Most of the riders were between 18 and 25 years old, and 17 participants were under 18 years old. The average riding experience of the couriers was  $3.0 \pm 4.2$  years. The most common time period for the accidents was between 12:00 and 18:00 ( $n=109$ , 42.4%). Overall, 164 (64.3%) of the accidents occurred on a sunny day, 52 (20.4%) on a cloudy day, 38 (14.9%) on a rainy day, and

**Table 2.** Injury characteristics of the orthopedic regions and treatment types

	n	%
Upper Limbs (Except Wrist and Hand)		
Yes	58	22.7
No	197	77.3
Wrists and Hands		
Yes	65	25.5
No	190	74.5
Lower Limbs (Except Foot and Ankle)		
Yes	69	27.1
No	186	72.9
Foot and Ankle		
Yes	81	31.8
No	174	68.2
Pelvis and Vertebrae		
Yes	12	4.7
No	243	95.3
Severity of the Injury		
Major	145	56.9
Minor	110	43.1
Treatment Type		
Conservative	204	80.0
Surgical	51	20.0

one (0.4%) on a snowy day. Most of the commercial motorcycle couriers (n=189, 74.1%) lacked professional motorcycle riding training. Eighty-two couriers had less than six months of riding experience, 81 had between six months and two years of riding experience, and 92 had more than two years of riding experience. According to the statements of the riders, 215 (84.3%) of the motorcycles were on a routine maintenance schedule. The average air temperature during the accidents was 16.6±8.5°C. The most common load carried was food (n=185, 72.6%). The daily working hours of the couriers were less than 4 hours for 31 couriers (12.1%), 4-8 hours for 165 couriers (64.8%), and more than 8 hours for 51 couriers (20.0%). The daily working hours of eight couriers were unknown (3.1%). The demographic characteristics of the patients included in the study are shown at Table 1.

The mean estimated crash speed was 39.1±20.4 km/h. The most common speed during crashes (41.2%) was between 21 and 40 km/h. Most of the motorcycles (68.2%) had engine displacements of less than 125 cc. The average AIS score was 1.7±0.7, and the mean ISS was 4.2±4.9. Most of the injuries (56.9%) involved major trauma, and the foot and ankle region was the most affected body area (31.8%). There were seven open fractures among 157 fractures (4.5%). Tables 2 and 3 show the body regions affected by the accidents and

**Table 3.** Characteristics of protective motorcycle riding equipment

	n	%
Helmet		
No	58	22.7
Yes	197	77.3
Motorcycle Pants		
No	182	71.4
Yes	73	28.6
Motorcycle Jacket		
No	137	53.7
Yes	118	46.3
Motorcycle Boots		
No	201	78.8
Yes	54	21.2
Motorcycle Gloves		
No	172	67.5
Yes	83	32.5
Motorcycle Protective Equipment Classification		
Full	28	11.0
Partial	94	36.9
Only Helmet	58	22.7
Unprotected	15	5.9
Unclassified	10	3.9
None	50	19.6

the types of motorcycle protective equipment worn during the accidents. While the most commonly used protective equipment was helmets (n=197, 77.3%), the least commonly used equipment was motorcycle boots (n=54, 21.2%). Fifty participants (19.6%) did not use any protective equipment, including helmets. In contrast, 22.7% of the commercial motorcycle couriers wore only helmets. Only 27 couriers wore full protective equipment for motorcycle riding.

Four commercial motorcycle riders died in our study. Two of them died due to head trauma, and two suffered from severe thoracic injuries (one aortic dissection, one hemo-pneumothorax). These four patients died within the first 2 hours after admission to the hospital. Tables 4, 5, and 6 show the bones fractured, injury characteristics, and affected body regions during the motorcycle accidents of the commercial couriers.

## DISCUSSION

Numerous studies have demonstrated that drivers of two-wheeled vehicles, such as motorcycles, are more likely to be involved in collisions than drivers of other types of vehicles on highways.<sup>[3,15-17]</sup> Most motorcycle accident victims were

**Table 4.** Fractures observed in the commercial motorcycle couriers

Fractured Bone	n	%
Clavicula	12	7.6
Scapula	3	1.9
Humerus	9	5.7
Ulna	8	5
Radius	21	13.3
Wrist Bones	5	3.1
Hand Bones	16	10.1
Pelvis-Acetabulum	3	1.9
Femur	5	3.1
Patella	5	3.1
Tibia	22	14
Fibula	19	12.1
Foot Bones	24	15.2
Vertebra	5	3.1
Total	157	

drivers under 40 years old,<sup>[5,14,18,19]</sup> and the majority were men.<sup>[5,20]</sup> The present study confirmed this, as 98% of the couriers were male, and 89.4% of them were under 40 years of age. Men are more likely to ride motorcycles than women, whether as professionals or for personal use, which accounts for their predominance among accident victims.<sup>[21,22]</sup>

According to the Turkish Highway Traffic Law, the only mandatory protective equipment for motorcyclists is a helmet.<sup>[23]</sup> In this study, 77.2% of the couriers were wearing helmets at the time of the accident. Adewoye et al. found that only 23.5% of motorcycle couriers used helmets in their study conducted in Nigeria.<sup>[24]</sup> In a study conducted by Okpoko et al., the percentage of motorcycle couriers using helmets was found to be 60.4%.<sup>[25]</sup> Furthermore, 77.3% of the couriers wore helmets in a study by Bertenshaw et al.<sup>[13]</sup> The helmet usage rate among motorcycle couriers in our study was higher than in Adewoye's and Okpoko's studies and nearly equal

**Table 6.** Non-orthopedic injury types and regions

Injury Type	Number
Head Contusion	5
Scalp Laceration	3
Jejunum Perforation	1
Pulmonary Contusion	8
Rib Fracture	5
Facial Abrasion	7
Intracranial Bleeding	4
Skull Fracture	2
Pneumothorax	2
Splenic Laceration	1
Renal Contusion	2

to the percentage in Bertenshaw et al.'s study.<sup>[13,24,25]</sup> Although the use of protective equipment other than a helmet is not mandatory, studies have shown that such equipment reduces the risk of injuries like lacerations and abrasions caused by friction with the ground during an accident, as well as the risk of open fractures.<sup>[26-28]</sup> Other protective equipment is used less frequently than helmets, as observed in our study. This may be due to the economic burden of these items, the couriers' lack of training and awareness, reduced comfort while riding, particularly in hot and humid weather, and the time constraints imposed on couriers, which make it challenging to take the time to wear full protective gear. Even though the only mandatory protective equipment for motorcyclists is a helmet, we believe that legal regulations could be organized to mandate systematic safety education for commercial motorcycle couriers, including the use of full protective equipment and safe riding training.

The most frequently injured body region was found to be the upper extremities (34%), according to a study by Bertenshaw et al. evaluating injuries sustained by couriers.<sup>[13]</sup> The lower extremities (32%) were the second most frequently injured.<sup>[13]</sup> A single-center study by Ganem et al. found that the leg

**Table 5.** Types of injuries in different orthopedic regions

	Upper Extremity	Lower Extremity	Pelvis-Acetabulum-Vertebra	Total
Abrasion	8	4	0	12
Contusion	12	17	0	29
Laceration	7	11	1	19
Fracture	74	75	8	157
Dislocation	5	3	0	8
Sprain	41	77	5	123
Total	147	187	14	348

(29%) and forearm (17%) were the most commonly injured body parts.<sup>[29]</sup> In their study on motorcycle accidents, Bittar et al. found that the tibia was the most frequently fractured bone (n=65, 61.9%), followed by the femur (n=30, 28.5%), fibula (n=30, 28.5%), radius (n=6, 11.4%), and humerus (n=6, 11.4%).<sup>[30]</sup> According to Koizumi et al., the lower extremity is the most commonly injured body part in motorcycle accidents (29.8%).<sup>[31]</sup> Wu et al. observed that 62.3% of the patients in their study had lower extremity injuries, followed by 47% with upper extremity injuries. Regarding injury types, Wu et al. found that 11.4% of patients had upper extremity injuries, and 31.4% had soft tissue injuries in the lower extremities.<sup>[32]</sup> Moreover, 27.2% of the patients had upper extremity fractures, and 22.8% had lower extremity fractures.<sup>[32]</sup> The findings of our study align with those of previous research. Although foot bones were the most commonly fractured, the most frequent single bone fracture was in the tibia (14%), followed by the radius (13.3%) and fibula (12.1%). Lower extremity fractures are more common in motorcycle accidents because these areas are more vulnerable to injury,<sup>[33]</sup> and upper extremity protective equipment is used more frequently than lower extremity protective gear, as observed in our study.

Motorcycle accidents can also result in cranial, facial, thoracic, and abdominal injuries, in addition to orthopedic injuries. According to a study by Wu et al., the head and neck (16.5%) were the most frequently injured areas apart from orthopedic injuries, followed by the thorax (10.2%) and the abdominal region (6.6%).<sup>[32]</sup> The head and neck region was found to be the most frequently injured body area in motorcycle accidents, aside from the extremities, with a rate of 27.7%, according to a cohort study by Abedi Gheslaghi et al.<sup>[34]</sup> A study by Barron et al. demonstrated that injuries outside the extremities vary depending on helmet use.<sup>[35]</sup> Their study showed that individuals wearing helmets experience more thoracic injuries, while those not using helmets sustain more injuries in the head and neck region.<sup>[35]</sup> The findings of our study are consistent with those yielded by other studies in the literature. The head-face region and the thorax are the most frequently injured body regions among motorcycle couriers, aside from the extremities.

Choi et al., Patel et al., and Barron et al. found that drivers who do not wear helmets experience more severe injuries than those who do.<sup>[35-37]</sup> However, a study by De Rome et al. discovered that the protective equipment used by motorcyclists had no effect on injury severity.<sup>[38]</sup> In a subsequent study, De Rome et al. found that using protective equipment significantly reduced the severity of injuries.<sup>[39]</sup> According to McKinlay et al., most motorcycle rider injuries were considered minor.<sup>[14]</sup> However, 56.9% of the injuries in our study were major. This discrepancy may be related to the fact that the hospital where our study was conducted is a level I trauma center, meaning that traumas with high injury severity and those requiring multidisciplinary treatment were referred to

our hospital more frequently. In a study by Spörri et al., open fractures accounted for 16.3% of injuries sustained in motorcycle accidents.<sup>[40]</sup> Similarly, Hasan et al. found that 14.9% of the injuries were open fractures, with 63.6% of these involving the tibia and fibula.<sup>[41]</sup> In our study, there were only seven open fractures among the 157 fractures identified. The percentage of open fractures was lower than that reported in other studies in the literature.

The present study has some limitations. The primary weakness is that it is descriptive and observational, rather than prospective and inferential. The study was conducted at a busy metropolitan trauma center where the patient population was skewed toward more severe injuries compared to most other hospitals due to regional referral patterns. A multicenter design might have produced a more homogeneous patient population. The participants in our study were commercial motorcycle couriers who sought hospital treatment following a motorcycle accident. Therefore, crashes involving minor injuries that did not result in hospital admissions may have been excluded from our study, which could have led to misinterpretations. The types, locations, and treatments of the couriers' injuries were evaluated in the study; however, the durations of their hospital stays, the total costs of their treatments, their missed workdays, their total recovery periods, and their long-term follow-up outcomes were not assessed. Much of the information in the study (such as protective equipment usage, average speed, motorcycle training, and motorcycle riding experience) was recorded according to the couriers' self-reports, without independent investigations of the crash scenes or vehicles. This reliance on self-reporting may have introduced inaccuracies that could have affected the results of the study. Furthermore, the study only evaluated motorcycle couriers' traffic accidents during the COVID-19 pandemic, which represents a relatively short time period. This is another limitation of our study. Comparative studies evaluating data from a longer period after the pandemic are needed. Despite these limitations, the strengths of our study lie in uncovering important information, particularly regarding the demographic data of this rapidly expanding professional group, the injuries they have sustained during motorcycle accidents, and their tendency to use protective safety equipment that can prevent injuries while working.

## CONCLUSION

The use of commercial motorcycle couriers increased significantly during the COVID-19 pandemic due to the implementation of "stay at home" orders, quarantine procedures for infected patients, a significant rise in home-office work, and the restriction that restaurants could only serve customers at home. Our study aimed to raise awareness of this issue by investigating orthopedic injuries and the use of protective equipment in this specialized type of employment, in light of the increased number of motorcycle accidents in this occupational group. Since wearing a helmet is mandatory while

riding a motorcycle, and the use of protective equipment other than helmets was relatively low, the prevalence of injuries to the extremities was found to be quite high. This issue should be carefully evaluated in terms of the health of motor couriers (most of whom are under the age of 40), their loss of workdays, and the related treatment costs imposed on the healthcare system. Our study also emphasizes the necessity of providing advanced motorcycle riding training for these professionals, enhancing motor couriers' awareness of the use of protective equipment, and increasing inspections through the development of legal regulations on this matter. We hope that the findings of our study will contribute to the epidemiological data in Türkiye, a nation where motorcycle use is highly common.

**Ethics Committee Approval:** This study was approved by the Haseki Training And Research Hospital Ethics Committee (Date: 06.10.2021, Decision No: 93-2021).

**Peer-review:** Externally peer-reviewed.

**Authorship Contributions:** Concept: M.E.; Design: M.E., E.G.; Supervision: M.E., M.Y.; Resource: E.G., C.A.; Materials: M.E., E.G., C.A.; Data collection and/or processing: E.G., C.A.; Analysis and/or interpretation: M.E., E.G., C.A., M.Y.; Literature search: M.E., M.Y.; Writing: M.E.; Critical reviews: M.E., E.G., C.A., M.Y.

**Conflict of Interest:** None declared.

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

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## ORJİNAL ÇALIŞMA - ÖZ

## Ticari motosiklet kuryelerinde COVID-19 salgını sırasında ortopedik yaralanmalar ve koruyucu ekipman kullanımı: Tek 1. seviye travma merkezi deneyimi

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**AMAÇ:** Çalışmamızın amaçları İstanbul'da 1. düzey bir travma merkezinde COVID-19 pandemisi sırasında ticari motosiklet kuryelerinde trafik kazası sonrası görülen ortopedik yaralanmalar ve koruyucu ekipman kullanımının değerlendirilmesi, gelecekteki çalışmalara epidemiolojik bilgi ve fikir sağlamaktır.

**GEREÇ VE YÖNTEM:** Çalışmamıza Nisan 2020 ile Nisan 2022 tarihleri arasında çalışırken trafik kazası geçiren ve acil servise getirilen ticari motosiklet kuryeleri dahil edildi. Kaza esnasında kuryelerin giydiği kask, ceket, pantolon, eldiven ve bot gibi koruyucu ekipmanlar forma kaydedildi. Ortopedik yaralanmalar ve uygulanan tedaviler (konservatif ve cerrahi) kayıt altına alındı, diğer tıbbi bölümlere danışılarak diğer vücut bölgelerindeki yaralanmalar ve yaralanma tipleri kayıt altına alındı. Ehliyet süresi, motosikletin motor hacmi, motosiklet sürüş eğitimi, hava koşulları, kaza sırasındaki tahmini hız ve kazanın saati not edildi.

**BULGULAR:** Araştırmaya 255 ticari motosiklet kuryesi dahil edildi. Yaralanmaların büyük çoğunluğunun (%56.9) majör travma olduğu, ayak ve ayak bileği bölgesinin yaralanmalardan en fazla etkilenen bölge (%31.8) olduğu görüldü. En sık kullanılan koruyucu ekipman kask (n=197, %77.3) iken, en az kullanılan ekipman ise motosiklet botuydu (n=54, %21.2). Çalışmadaki hastaların 50'si (%19.6) kask dahil herhangi bir koruyucu ekipman kullanmamaktaydı. Buna karşılık ticari motosikletli kuryelerin %22.7'si yalnızca kask takıyordu. Sadece 27 kurye (%10) motosiklet sürerken tam koruma ekipmanı giyiyordu. Çalışmada toplamda 157 kırık tespit edildi ve bunların 7'si (%4.5) açık kırıktı.

**SONUÇ:** Motosiklet kullanırken kask takmanın zorunlu olması ve kask dışında koruyucu ekipman kullanımının oldukça az olması nedeniyle ekstremite yaralanmalarının görülme sıklığının oldukça yüksek olduğu görüldü. Çalışmamızda bu profesyonellere ileri düzey motosiklet sürüş eğitimi verilmesi, motorlu kuryelerin motosiklet koruyucu ekipman kullanımı konusunda farkındalıklarının artırılması ve bu konuyla ilgili yasal düzenlemeler oluşturularak denetimlerin artırılmasının gerekli olduğu tespit edilmiştir.

**Anahtar sözcükler:** Kırık; koruyucu ekipman; ticari motosikletli kurye; yumuşak doku travması.

Ulus Travma Acil Cerrahi Derg 2024;30(12):892-899 DOI: 10.14744/tjtes.2024.26177