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ORIGINAL ARTICLE / ÖZGÜN ARAŞTIRMA

Evaluation of Dental Trauma Related Posts on Instagram

Instagram'daki Dental Travma ile İlişkili Paylaşımların İncelenmesi

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Abstract

Objective: The aim of the present study was to describe dental trauma related posts which are relation with the type of presentation, the distribution, etiology, treatment procedure and follow-up of the trauma on Instagram.

Materials and Methods: This was a descriptive study. The hashtags #dentaltrauma, #teethtrauma, #crownfracture, #toothfracture, #rootfracture, #avulsedtooth, and #dentaltraumatology were selected. All posts under these hashtags within a six month period (November 2018-April 2019) were analyzed. A total of 456 posts were included in this study. Data was collected, including details about the presentation of the case, etiology of trauma, type of trauma, follow-up period, treatment material, and informative advices for patients. SPSS (Version 21.0) was used for statistical analyses.

Results: A total of 645 traumatized teeth were shared, 96% of them were permanent teeth. It was found that the most common shared cases were trauma of the maxillary central incisors (86%). No etiological factor of trauma reported in 76% of posts. The most shared type of luxation injury was tooth avulsion (31.7%). More than half of the posts about crown and crown-root fractures (77.1%) were uncomplicated crown fractures. Follow-up time was unreported in more than half of shared posts (86.2%). 13% of the shared dental trauma posts included informative advices for the patients.

Conclusion: In this study, it is concluded that most of the Instagram posts which are related with dental trauma did not include essential elements for dental trauma management.

Keywords: dental trauma, endodontics, Instagram, pediatric dentistry, social media.

Öz

Amaç: Bu çalışmanın amacı; hekimler tarafından Instagram'da paylaşılan dental travma ile ilgili paylaşımların, Instagram'daki sunum şekli, dağılımı, etiyolojisi, tedavi ve takip prosedürünün incelenmesidir.

Materyal-Metot: Bu tanımlayıcı bir çalışmadır. Araştırma için #dentaltrauma, #teethtrauma, #crownfracture, #toothfracture, #rootfracture, #avulsedtooth, ve #dentaltraumatology etiketleri seçilmiştir. Bu etiketler ile etiketlenmiş son 6 ayda paylaşılan 456 paylaşım değerlendirilmiştir. Olgu sunumu, travma etiyolojisi, travma türü, takip süresi, tedavi materyali ve hastalar için bilgilendirici tavsiyelerin bahsedildiği paylaşımlar hakkındaki veriler toplanmıştır. İstatistiksel analizlerde SPSS (Versiyon 21.0) programı kullanılmıştır.

Bulgular: Toplam 645 adet travmaya uğramış diş paylaşılmış olup, bunların % 96'sının daimi dişler olduğu görülmüştür. En sık paylaşılan vakaların maksiller santral kesici dişleri ilgilendiren travma vakaları olduğu tespit edilmiştir (% 86). Paylaşımların %76'sında travmanın etiyolojik faktörü bildirilmemiştir. En sık karşılaşılan lüksasyon yaralanması tipi dental avulsiyon yaralanması olmuştur (% 31.7). Kron ve kron-kök kırıkları ile ilgili paylaşımların yarısından fazlası (% 77.1) komplike olmayan kron kırıkları olmuştur. Vakaların takip süresi paylaşımların yarısından fazlasında bildirilmemiştir (% 86.2). Dental travma paylaşımlarının %13'ünde hastalara yönelik bilgilendirici tavsiyelere yer verilmemiştir.

Sonuç: Bu çalışmada, Instagram'daki dental travma ile ilgili paylaşımların çoğunun dental travma yönetimi için gerekli unsurları içermediği sonucuna varılmıştır.

Anahtar Kelimeler: Çocuk diş hekimliği, dental travma, endodonti, Instagram, sosyal medya.

Introduction

One of the most important issues in dentistry is dental trauma, which is a common public health problem especially among children and adolescents (1). It has been reported in a meta-analysis study (1996-2016) that more than one billion people alive today have had dental trauma (2). The incidence and etiological factors of dental trauma vary across

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countries because of cultural, behavioral or environmental differences (3). Dental trauma can cause alterations in physical appearance, speech defects, emotional impacts and high treatment costs (4, 5).

Treatment of trauma is challenging for many physicians, both in terms of meeting the aesthetic and functional expectations of patients and of relieving their pain and it often requires multidisciplinary approach. For the management of dental trauma and to take precautions before it occurs, it is important to know the localization of the traumatized teeth, type of trauma and etiological factors (6). In addition, follow-up is very important to determine the prognosis of treatments in trauma cases. Guidelines of the International Association of Dental Traumatology (IADT) recommend appropriate follow-up, by clinical and radiographic monitoring between one to five years depending on the type of trauma (7).

Nowadays, social media is a propulsive force in the information sharing and is involved in every moment of life. It has been found that social media is an essential factor in shaping beliefs about health practices (8). Instagram is the most popular image and video sharing social media forum, which is reported to have one billion users as of June 2018 (9).

Instagram has attracted the attention of researchers because of its growing popularity and frequent user engagement, and accordingly it has been the subject of studies in various fields of medicine such as clinical dermatology (10), clinical infectious diseases (11), plastic surgery (12) and radiology (13). Dentistry is also a visually rich discipline; there have been a few dental studies that involve the use of social media (14-17), but only one study has been found to use Instagram, with a focus on fluoride (8).

Dental trauma is one of the issues of dentistry with high aesthetic and functional expectations, yet in accessible literature there is no study about posts on Instagram regarding dental trauma. The aim of the present study is to describe dental trauma related posts on Instagram. The type of presentation, the distribution, etiology, treatment procedure and follow-up of the trauma shared in the Instagram posts will be evaluated.

Materials and Methods

This was a descriptive, cross sectional study which has been described as a systematic approach for searching Instagram posts (8). A new Instagram account was created on November, 1, 2018, and the new account was used only for this study.

In a pilot study for the selection of hashtags, a single researcher examined posts shared with the '#dental trauma' hashtag. In these posts, the most common 50 hashtags accompanying '#dental trauma' hashtag which stated under the posts was noted. The posts under the 20 most frequently repeated hashtags were examined. Of the examined hashtags, those whose top 5 posts were not associated with dental trauma were excluded. Seven hashtags (#dentaltrauma, #teethtrauma, #crownfracture, #toothfracture, #rootfracture, #avulsedtooth, #dentaltraumatology) that meet the inclusion criteria were selected for the main study.

All posts under these hashtags within a six month period (November 2018-April 2019) were analyzed. The two researchers were trained and calibrated to perform the search, and Cohen's Kappa coefficient was used to examine inter-examiner agreement for the examination of the posts. The posts were grouped among themselves as dental trauma, non-dental trauma, veterinary dentistry and advertisement (congress presentation, clinical advertisement, informative brochure, etc.). The posts grouped under dental trauma and the written statements by the Instagram user, who shared the posts, were examined. The posts, which were in the form of video, were shared only as photographs without any statements, and those whose statement was not in English were excluded. In multiple photo sharings, all photographs were examined and included as a single post.

The main data collection was conducted in 10-day intervals three times per month. During that time, the top 20 posts were viewed on every hashtag. Posts were labeled with their respective data collection day for revisiting. Repeated posts were not included in each review. There were a total of 3870 posts in November, 3988 posts in December, 3460 posts in January, 3443 posts in February, 3887 posts in March, and 3925 posts in April. A total of 456 posts were included in this study (**Table 1**).

Table 1. The numbers of total and included Instagram posts for each hashtag in study period

	November	December	January	February	March	April
#dentaltrauma	2538/60	2658/58	2760/75	2825/56	2882/50	2902/30
#teethtrauma	45/3	46/0	48/0	53/0	57/1	59/0
#crownfracture	48/7	52/6	55/3	58/3	65/2	68/1
#toothfracture	497/12	505/8	526/12	560/10	588/10	651/8
#rootfracture	360/4	373/2	373/0	375/0	375/0	378/0
#avulsedtooth	102/6	110/3	119/2	119/0	120/0	122/0
#dentaltraumatology	280/17	290/5	290/0	293/0	295/1	304/1

Data was collected, including details about the origin country of the posts, specialty of dentists, presentation of the case (photography, radiograph, or both), etiology of trauma, type of trauma, follow-up time, treatment material and informative features for patients.

SPSS software (version 21.0; IBM, Chicago, IL, USA) was used for statistical analysis. The compatibility of observations performed by the investigators was assessed according to Cohen's Kappa coefficient. Inter-examiner reliability for grouping of posts was 0.95, for details of posts was 1. The demographic data of this study, in number and percentage, was tabularized. Categorical variables were described by frequencies (percentages) and were compared using the chi-square test. Significance was defined as having a P value <0.05.

Results

The hashtag #dentaltrauma generated 329 posts, #teethtrauma generated 4 posts, #crownfracture generated 22 posts, #toothfracture generated 60 posts, #rootfracture generated 6 posts, #avulsedtooth generated 11 posts, and #dentaltraumatology generated 24 posts.

When the shared posts were examined by country of origin, it was seen that most posts came from the American continent (32.5%), while the least number came from the African continent (0.4%). No statistically significant difference was found between the countries in regards to the information shared, such as the etiological factor, follow-up period, radiographic examination, treatment material or patient recommendations (p>0.05).

Of the dentists sharing the posts on Instagram used in this study, 237 (52%) were general practitioners. Among the specialists, endodontists shared more posts (33.6%) than pedodontists (28.8%) and restorative/aesthetic dentists (19%).

A total of 645 traumatized teeth of were shared, 96% of them are permanent teeth and 4% of them are primary teeth. For both primary and permanent dentitions, it was found that the most common shared cases were trauma of the maxillary central incisors (86%). The distribution of the teeth according to their localizations are given in the **Table 2**.

Table 2. Distribution of the localization of traumatised teeth

	Maxilla		Mandibula		TOTAL
	Permanent dentition	Primary dentition	Permanent dentition	Primary dentition	
Central incisors	505 (91%)	18 (3%)	33 (6%)	0 (0%)	556 (86%)
Lateral incisors	63 (83%)	6 (8%)	7 (9%)	0 (0%)	76 (12%)
Canines	7 (70%)	1 (10%)	2 (20%)	0 (0%)	10 (%1.5)
Premolars	3 (100%)	-	0 (0%)	-	3 (%0.5)
Molars	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
TOTAL	578 (90%)	25 (4%)	42 (6%)	0 (0%)	645 (100%)

Photographs were used in 356 (78%) posts, radiographs were used in 29 (6%) posts and both of them were used in 71 (15.5%) posts.

No etiological factor of trauma was reported in 347 (76%) of the posts. There were 49 (11%) traumas caused by falls, 43 (9%) by sports accidents, 7 (1.5%) by running over , 4 (0.8%) through physical aggression, 2 (0.4%) from crashing , 3 (0.6%) caused by car accidents and only 1 (0.2%) other reason .

The most shared type of luxation injury was tooth avulsion (31.7%), followed by lateral luxation (25.8%), concussion (14.2%), extrusive luxation (10.8%), intrusive luxation (10%), and subluxation (7.5%) (**Table 3**).

Table 3. Distribution of the types of luxation injuries

TYPE	NUMBER OF POSTS
Concussion	17 (14.2%)
Subluxation	9 (7.5%)
Lateral luxation	31 (25.8%)
Extrusive luxation	13 (10.8%)
Intrusive luxation	12 (10%)
Avulsion	38 (31.7%)

More than half of the posts shared that were a type of crown or crown-root fracture (77.1%, n = 283) were an uncomplicated crown fracture. This result was followed by complicated crown fracture (12.8%, n = 47), root fracture (3.8%, n = 14), complicated crown-root fracture (2.7%, n = 10), dentoalveolar fracture (2.2%, n = 8), and uncomplicated crown-root fracture (1.4%, n = 5) (**Table 4**).

Table 4. Distribution of the types of crown and crown-root fractures

TYPE	NUMBER OF POSTS
Uncomplicated crown fracture	283 (77.1%)
Complicated crown fracture	47 (12.8%)
Uncomplicated crown-root fracture	5 (1.4%)
Complicated crown-root fracture	10 (2.7%)
Root fracture	14 (3.8%)
Dentoalveolar fracture	8 (2.2%)

Follow-up time was not reported in more than half of the shared posts (n = 393, 86.2%; **Table 5**). There was a statistically significant relationship between the follow-up period and presentation of the case ($p<0.05$). It was observed that the dentists who stated the follow-up period shared only photographs.

Table 5. Follow-up time which stated on dental trauma posts

TIME	NUMBER OF POSTS
Unreported	393 (86.2%)
1 week	6 (1.3%)
2 weeks	5 (1.1%)
1 month	15 (3.3%)
6 months	6 (1.3%)
1 year	18 (3.9%)
+ 1 year	13 (2.9%)

Of the shared dental trauma posts, 59 (13%) were informative for the patients, while 397 posts (87%) were just case sharing. The material used to treat the trauma was stated in 251 (55%) posts.

Discussion

With over one billion monthly users, Instagram is an immensely popular social network worldwide, which is why we chose this platform for our study. Instagram is especially popular in the United States, having over 110 million users there (9). In accordance, most of the posts shared by dentist in this study were from America (32.5%). It can be also related with including only posts written in English.

The multiplicity of possible trauma cases and the wide range of treatment choices make it complicated for dentists to provide evidence-based treatment and recommend the best possible treatment option for the patient (18). The treatment of dental trauma cases often requires a multidisciplinary approach, which seems to be the reason for the different dental specialists in this study sharing dental trauma cases. Approximately half of the dentists were general practitioners (52%). Among the specialists, endodontists shared more posts (33.6%) than pedodontists (28.8%) and restorative/aesthetic dentists (19%).

In this study, 96% of the shared cases on Instagram were traumatic injuries to the permanent teeth. This is in agreement with epidemiological studies which state that the the frequency of traumatic injuries in the permanent teeth is considerably higher than that in the primary teeth (19, 20). The findings may be also related to studies which report that the most frequently applied treatment for traumatic dental injury to primary dentition was follow-up (21, 22). It is important to note that follow up as a treatment choice is less attractive to users of Instagram, so dentists may prefer not to share these cases.

For both primary and permanent dentitions, it was found that the most common shared cases were trauma of the maxillary central incisors (86%). This finding is in accordance with previous studies that found that dental trauma most often affects the maxillary anterior teeth because of their position (21, 23-26). It was found that 15% of global Instagram users were young women between the ages of 18 and 24 (9). According to this result, the sharing of anterior teeth cases on Instagram could be related to attracting the attention of young female patients with particularly aesthetic concerns.

In the current study, the majority of shared cases were uncomplicated crown fractures (77.1%). This is in accordance with previous studies reported that in permanent teeth, enamel/enamel-dentin fracture is more frequent than any other type of dental trauma (23, 24, 27, 28). The reason

for dentists choosing to share a case of uncomplicated crown fracture with a complete aesthetic restoration may be the appealing of such a case to patients is more than a bleeding, splinted or completely intrusive tooth.

The common etiological factors of dental trauma are falls, collisions, traffic accidents, sports activities and interpersonal violence. These factors may vary among countries because of cultural, behavioral, and environmental differences (3, 24, 25, 29, 30). The results of this study showed that the etiological factors of most of the shared trauma cases were not stated (76%). Among the cases in which the etiological factors were indicated, the main etiological factors of dental trauma were falls (11%) and sports accidents (9%). Etiological factors are sources of important information to other dentists who will see these shared cases, as they can use this information to educate patients about dental trauma prevention. It is also important for patients to know the etiological factors of dental trauma in order to take precautions such as mouth guards.

Radiographs are essential tool for both establishing the differential diagnosis of traumatic dental injuries and to determine the post-trauma complications, such as periapical pathology, root resorption, or the long-term sequelae of permanent teeth (31). In this study, it was observed that the radiographs of most cases (78%) were not shared on Instagram. In the trauma cases where radiographs are of significant importance, sharing only the photos of aesthetic treatments performed immediately after the trauma is incomplete and can mislead followers on the prognosis of these cases.

It has been reported that some post-trauma complications, such as crown discoloration, pulp obliteration, fistula, inflammatory root resorption, and pathologic bone loss, may occur after a few weeks, months, or even years (32-34). The guidelines of the International Association of Dental Traumatology recommend appropriate follow-up between 1-5 years, depending on the type of trauma. In cases of severe primary teeth injuries, clinical and radiographic monitoring is recommended each year until the eruption of the permanent successor (7, 35). A follow up of less than 6 months after the trauma was reported to be inadequate for assessing the treatment outcomes (34). But on Instagram, 86% of the dentists did not share the follow-up period of their cases. Only 7% of the cases shared included information on the follow-up for more than 6 months. It was also observed that the dentists who stated the follow-up period usually shared only photographs. Thus, most of the shared cases did not give any information about the long-term success or complications of the treatment. The success of treatments shared on Instagram can be misleading for followers.

Audiovisual methods are important for educating the public about dental trauma (36). In a study, it is stated that the Internet, healthcare professionals and television were the most preferred sources of information on the emergency management of dental trauma (37). Instagram was identified as a unique mechanism for reaching people, especially the younger populations, making it a valuable mechanism for health education (10). In order to successfully use trauma posts as an educational or informative tool for patients and other medical or non-medical professionals, the details of the case (etiology, treatment procedure, prognosis etc.) and the importance of prevention should be included in the comments on Instagram posts. Only 13% of the shared posts in this study included informative comments; this result may indicate that most of the current Instagram posts are insufficient to raise the awareness of the public about dental trauma. This finding is similar with another study that investigated dental trauma on Facebook and found that that platform also provided insufficiency information on dental trauma to the public (38).

The limitation of this study was the evaluation of only the posts written in English and posts which had open privacy settings and were available for everyone to see. Origin country of the posts, specialty of dentists included in the study are taken as stated in their profiles. Although Instagram is considered a popular platform for medical research studies (8, 10-12), it should be noted that the information provided can be misleading. Instagram has a vast user platform and for widespread generalizability, evaluating more cases, including those written in other languages, and including more hashtags will be useful in the future.

Conclusion

In this study, posts related to trauma on Instagram were generally advertising, self-promotional, or unrelated content. Most of the posts do not include essential elements for dental trauma management, such as the etiology, treatment procedure, prognosis, follow-up period, post-trauma recommendations, or trauma prevention methods. It is concluded that in their present form, posts on Instagram are neither informative for patients nor educational for other dentists. In order for Instagram use to play an educational

role for dental trauma management, shared cases should be presented more carefully, and incorrect or incomplete information should be avoided.

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