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Dental and orofacial trauma in pony and horseback riding children

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Abstract – An epidemiological survey was carried among pony and horseback riding children in nine pony and horseback riding clubs, Istanbul. The purpose of the present study was to evaluate the prevalence of dental trauma in young pony and horse riders. A total of 214 children were interviewed to determine the occurrence of dental trauma during pony and horseback riding. Some 2.3% of participants ($n = 5$) had already been affected by dental and orofacial trauma. Horse riders experienced dental and/or orofacial trauma significantly more than the pony riders. Results revealed that these children's awareness of dental trauma is limited while all of them (100%) wore helmets.

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Vigorous physical activities offer a variety of health benefits to youngsters. However, participating in such activities also places athletes at risk of injury, including trauma to the teeth and mouth (1, 2). Actual systematic research concerning dental and orofacial trauma obtained from athletes began in 1929 and was limited only to football players and boxers (3). In 1951, Cathcart (4) stated that dental protection is not only for these athletes, but also for athletes competing in other various contact sports.

Horseback riding is a 'limited contact sport' with a very high incidence of injury, but also of severe injuries, sometimes with a fatal outcome (5). Actually it was stated that the head and face sustain nearly 25% of horseback riding related injuries (6–8). There are over a million registered pony and horseback riding children under the age of 18 across the world. All of these children may be at risk of dental and orofacial trauma. Reports between 2000 and 2003 demonstrate that from children sustaining dental trauma visiting paediatric dentistry departments in Istanbul, only between zero and 0.3% suffered this condition in connection with horseback riding (9, 10). However, no studies exist on the prevalence and prevention of dental and orofacial trauma regarding horseback riding.

The objective of the present study is to determine the degree of dental trauma occurring during horseback riding among children riding ponies and horses in Istanbul and to evaluate the level of information about dental trauma and the usage of helmets.

Methods

The present study is based on data obtained from personal and direct interview, through a questionnaire answered by pony and horseback riding children under age of 18 years old. All data was collected in January 2005. The study population included nine clubs in downtown and suburbs of Istanbul. Written informed consent was obtained from the parents. The questionnaire, modified from Caglar et al. (1), consisted of the following items: club, name, gender, age, period of time practising riding, having orthodontic treatment at the moment, history of dental trauma while practising the respective sport, children's level of awareness concerning the need for using a helmet and mouthguard (MG) while training. A total of 214 children were approached for interview. The statistical evaluation was carried out using the aspects of dental trauma history, awareness of dental trauma

and protection methods. The collected data were analysed using SPSS software for Windows (version 10.0) and the level significance was set at 5%. Chi-square test was carried out for statistical analysis.

Results

The present study population composed of 135 girls (63%) and 79 boys (37%). Mean age of the riders was 7.2 ± 3.1. Mean duration of practice was 1.4 ± 1.3 years. Age, gender and year of practice of riders in the pony clubs are given in Table 1. From the children interviewed, 24 of them (11.2%) rode only horses, 166 of them (77.5%) rode only ponies, and 24 of them (11.3%) practiced both.

Some 2.3% of players ($n = 5$) had already been affected by dental and orofacial trauma, which was separated into the following categories: (i) injuries to the soft tissues (cheeks, lips, oral mucosa), (ii) hard and periodontal tissue of teeth, (iii) bone tissue (including maxilla, mandible) (Table 2). The wearing of a helmet was found to be obligatory for all children (100%) interviewed. From the riders who suffered trauma only one of them rode pony, while four riders rode horses ($P = 0.00$; Table 3). All of these riders stated that they fell from pony or horse. Mean age of traumatized riders was 11.8 ± 1.4 and they had rode for a longer period (3 ± 1.4 years) which these data are different than the general sample. Attitudes of the children on dental care are shown in Table 4. From the point of protection from dental trauma, only 27 riders (12.6%) stated that they had dental trauma protection education. From the children interviewed, the majority of them (70.5%) stated that they were aware of their club's emergency system and whom to contact in case of emergency.

Table 1. Gender, mean age and year of practice of pony and horseback riders regarding clubs

Club	Animal	*n*		Age (mean ± SD)	Number of years of practice (mean ± SD)
		Girls	Boys		
Ballica	Horse	5	5	10.9 ± 2.5	2.5 ± 1.7
Casaba	Pony	1	1	8.5 ± 0.7	1*
Doga Koleji	Pony	37	46	6.7 ± 0.4	1 ± 0.3
Gocmen Ranch	Pony	–	3	11 ± 2.6	1*
	Horse	1	–	17	3
Istanbul Atli Spor	Pony	53	11	7.6 ± 2.6	1.7 ± 1
	Horse	3	1	15.2 ± 2	1.5 ± 0.5
Kemer Country	Pony	7	2	8.1 ± 0.9	2.4 ± 1.3
	Horse	6	1	11.7 ± 1.1	3.7 ± 2.2
Saklikoy	Horse	1	1	9*	2.5*
Sirapinar	Pony	3	–	6.3 ± 0.5	1.3 ± 0.5
	Horse	2	–	10.5 ± 2.1	1.5 ± 0.7
T.K.B.A.	Both	16	8	13.6 ± 3	3.3 ± 1.7
Total	All	135	79	7.2 ± 3.1	1.4 ± 1.3

*SD: ±0.00001.

Table 2. Distribution of dental and orofacial trauma among pony and horseback riders

Type of injury	Tissue	Cases for pony riders (*n*)	Cases for horse riders (*n*)
Soft tissues	Cheeks	–	–
	Lips	1	2
	Oral mucosa	–	1
Hard and periodontal tissue of teeth	Intrusion (tooth no 51)	1	–
	Avulsion (tooth no 21)	–	1
Bone tissue	Maxilla	–	–
	Mandible	–	1

Table 3. Traumatized riders ($n = 5$)

Riders	Pony [*n* (%)]	Horse [*n* (%)]	Total [*n* (%)]
Traumatized	1 (0.5)*	4 (22.4)*	2.3 (5)

*$P = 0.00$.

Table 4. Dental attitudes of pony and horseback riders

Riders [*n* (%)]	Awareness of protection methods			
	Trauma education received [*n* (%)]	Ready for emergency plan [*n* (%)]	Wear helmet [*n* (%)]	Aware of MG [*n* (%)]
214 (100)	27 (12.6)	151 (70.5)	214 (100)	12 (5.6)

Discussion

In Turkey, traumatic injuries related to horseback riding was first noticed and prevented when 'cirit', a competitive game in which children on horses jousted with wooden javelins, was legally banned on 15 June 1826 as a result of the increasing number of adolescent injuries and deaths associated with this traditional discipline (11). Today, there are many disciplines such as cross country, dressage, horseball, polo, show jumping and voltige where necessary care is intended to prevent traumatic injuries (such as usage of helmets).

Whatever the discipline may be, horseback riding may cause dental and orofacial trauma mostly caused by falls from the pony and horse (2, 12–15), collision with branches when riding in forests (2) or by horse kicks (2, 14, 16). Hill et al. (17) described horseback riding as the most dangerous individual sport regarding dental and facial injuries. However literature shows no prevalence of dental trauma regarding horseback riding children.

In recent studies, it was found that factors associated with increased risk of head injury included being young (under 18), female and riding 15–24 h per month (8, 13, 15, 18). In the present study, mean age of traumatized riders was higher than the general

sample and no dominant gender was noticed. None of the riders rode over 24 h per month.

Recently, it was concluded that pony riders sustain less injuries than horse riders (14). In the present study; horse riders (22.4%) experienced dental and/or orofacial trauma significantly more than the pony riders (0.5%).

High rates of head injury and low rates of helmet usage suggest a more effective strategy to encourage use of helmets (18, 19). The American Academy of Paediatrics (20) stated (current as of 2005) that young riders, when mounted, should wear helmets that meet the 1988 American Society for Testing and Materials (ASTM) standards and are certified by the Safety Equipment Institute (SEI). The helmets should be secured by appropriate chinstraps. Other types of helmets, including bike helmets, are stated as inadequate. In the present study, following the statements of the Turkish Equestrian Federation, all children (100%) were wearing appropriate helmets. However it is obvious that there are many in rural regions who do not wear helmets. Currently there are no guidelines regarding usage of mouthguards while horseback riding. In the present study none of the children were wearing a mouthguard, however 5.6% knew it would be appropriate to use it.

Athletes undergoing orthodontic treatment present a particular problem as they are potentially at greater risk of injury because of increased tooth mobility and the presence of orthodontic appliances (1). In the present study, 18 of the children were wearing orthodontic brackets while only one of them experienced dental trauma.

Based on the results and discussion, awareness of these children to dental and orofacial trauma is neglected. Previous cases and reports indicate that influence of educators' role on immediate management of traumatized teeth is vital and may lessen trauma cases (21, 22). At this point, education of people who are in charge of these children while riding seems to be the most effective method for prevention. In the present project, rider instructors and chairman were given an education programme mentioning the importance of dental trauma protection methods such as the utilization of helmets, mouthguard and management of dental trauma in case of emergencies. This programme should also be presented to all parents, riding instructors, horse show organizers, and managers of other countries.

Conclusions

1 From the moment a youngster starts to practice horseback riding, (s)he should be encouraged to wear a helmet to get used to this sensation and, would be automatically consider it as a part of the ride.

2 In the present study, prevalence of dental and orofacial trauma in pony and horseback riding children was found to be rather low and more studies should be carried out to detect prevalence for to comment usage of a mouthguard.

3 Horse riders experienced dental and/or orofacial trauma significantly more than the pony riders.

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