

Evaluation of Knowledge and Attitude of Sports Participants toward Protective Mouthguards in Riyadh City

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Abstract

Objective: To evaluate the knowledge and attitude of sports participants toward protective mouthguards and sports-related dental injuries.

Methodology: A prospective cross-sectional study was conducted in a form of digitalized self-administrated questionnaire that was distributed randomly among sports participants in Riyadh, Saudi Arabia. The questionnaire consisted of 16 questions focusing on knowledge and attitude of sports participants toward using protective mouthguards and sports-related dental injuries. *Chi-square* test was used to investigate associations between factors.

Results: A total of 423 sport participants have responded. Only 353 participants were included in this study. No association was found between the level of education and occupation and knowledge of availability of protective mouthguards. However, statistically significant association was found between gender and knowledge where males had more knowledge on the availability of protective mouthguards than females ($p=0.001$) and type of sport and knowledge where participants who run, play football and swim had knowledge than others ($p=0.021$).

Conclusion: Within the study limitations, the findings show significant inadequate knowledge among Riyadh city sports participants regarding mouthguard usage as a protective measure. However, the findings of this study may contribute the sports participants for implication towards their use of mouthguards reducing the prevalence of orofacial injuries.

Keywords: Mouthguards; *Chi-square* test; Dental injuries; Orofacial injuries

Introduction

A physically active lifestyle is essential in routine life and it is important for all age groups of people and well-being of humans especially nowadays with the remarkable development of sports

in Saudi Arabia and many different types of sports activities, which involves all ages. Owing to all its health benefits, popularity of sports is escalating vigorously, especially among young individuals. In 2012, it was anticipated in the United Kingdom that sports participation would boost by 2 million participants after the Olympic games in London. The momentous growth elated with higher incidences of injuries [1].

Sports participants are at risk of injuries especially orofacial injury. Dental injuries are the most common type of orofacial injuries during sport activities, such as maxillary and mandibular fractures, luxated or avulsed teeth, lip lacerations and many other injuries of soft and hard tissues. It has been recorded in various studies that dental trauma accounts for 10%-36% of most injuries. Moreover, some studies in the United States have shown that 60% of sports participants were involved in dental trauma. Injuries vary with the mouth being the most prevalent area. They include soft tissue and hard tissue injuries such as crown/root fractures, intrusion, luxation and avulsion. Most common types of those injuries are soft tissue lacerations and tooth fractures [2,3].

Although there are few research related to this topic in the literature yet, there are relatively low number of studies conducted on dental trauma associated with sports in Saudi Arabia and a lack of similar researches in Riyadh city has been noticed. Accordingly, the objective of the current study was to evaluate the knowledge and attitude of sports participants toward protective mouthguards and sports-related dental injuries in Riyadh city, Saudi Arabia.

Over the years, best cure has always been prevention. In the modern dental practice, means of prevention for dental injuries must be implemented in daily practice. With this increase in individuals participating in sports activity, specific attention to contact sports is emphasized, their suitability to injuries rose with it. Such incidence may be easily prevented by the use of custom-made mouthguards. In basic concept, a mouthguard is a device or appliance of resiliency placed intraorally usually to prevent or reduce the probability of orofacial and dental injuries. Mouthguards were shown to be very effective as preventive appliances for oral injuries [4].

Sports and exercise are linked to better health, however certain activities can raise the risk of traumatic injuries to the mouth and teeth. According to several US studies, 60% of people suffered oral injuries when participating in athletics. Contrary to other activities, direct contact sports (such as boxing, wrestling, martial arts, etc.) have been linked to an increased risk of dental injuries [5].

Dental trauma can have a variety of effects, from a simple tooth fracture to tooth avulsion. Avulsion is one of the circumstances that necessitate the subject or those nearby to be aware of the proper answers, as what is done directly after avulsion, tooth survival is significantly impacted. Immediate re-implantation or maintaining the tooth in a wet storage medium is crucial for successful re-implantation. However, allowing the tooth to dry can lead to undesirable consequences. Sports participants should be aware of how to respond to dental trauma and use mouth guards to prevent sports-related dental trauma. Non-users of mouth guards have a higher risk of orofacial injuries.

This study evaluates sports-related dental trauma among direct and non-direct contact sports participants in Dammam and Khobar, Saudi Arabia and assesses mouth guard use prevalence and associated factors [6].

Sports competitions and recreational activities are practised by infants, kids and teenagers for their physical and mental health. Unfortunately, taking part in sporting activities puts you at danger of suffering trauma to your mouth's soft and hard tissues, including lacerations to your lips, cracked, luxated or avulsed teeth, fractures to your maxilla or mandible and injuries to your gingiva, tongue or mucosa. Dental injuries are the most frequent orofacial injuries suffered while playing sports. Falling objects and transportation accidents are two other etiological factors that contribute to trauma. According to numerous studies, 10% to 36% of injuries from all causes are sports-related. The role of the dentistry profession in relation to the growing popularity of contact sports and the encouragement to engage at a young age. In respect to the prevention of dental and other orofacial athletic injuries, the dentistry profession's involvement has grown in importance. As a result, those who participate in sports run the danger of suffering tooth injuries. This should be made clear to kids, coaches, trainers, parents and dental professionals. Sports-related soft-tissue and hard-tissue injuries to the mouth and face are frequent. For example, tooth intrusions, luxations, crown and/or root fractures, full avulsions and dentofacial fractures are all examples of hard-tissue injuries that affect the teeth and facial bones. Sports dentistry dates back to the 1980s and includes knowledge of the injury-prone dentition as well as expertise in the quick treatment of dental injuries [7].

Injuries to the top front teeth, which can chip, fracture, become loose or be avulsed, are most common in athletes who participate in contact sports. There is a chance that this damage will have devastating effects on eating, speaking and how one looks. There are very few studies on the prevalence of dental injuries in sports that are based in India. In Saudi Arabia, there is

a problem with dental trauma related to sports that needs to be better researched. In the cities of Dammam and Khobar in the Eastern Province of Saudi Arabia, participants in direct and indirect contact sports were studied to determine their level of awareness, attitudes and practises regarding oral trauma caused by sports. An additional goal was to determine how frequently research participants used mouth guards and any relevant characteristics.

Materials and Methods

A prospective cross-sectional study was designed to address the research objectives. Ethical approval was obtained from the institutional review board at, Riyadh Elm university, Riyadh, Saudi Arabia with the number: RC/IRB/2018/809. The study was conducted in Riyadh city at four districts sports gymnasiums using a self-administered, digitized structured questionnaire consisted of 16 questions. The validity of the questionnaire was tested by having one expert review the questionnaire and by conducting a pilot-study which was done on 10 sports participants to ensure that all questions were clear and can be understood easily. The pilot study results were not included in the final research statistical analysis. The questions have been edited and modified then translated to Arabic language and then reviewed by a native Arabic speaker expert again. The research targeted the sports participants who are 16 years old and above from both genders. Any sports participants with osteoporosis or undergoing orthodontic treatment were excluded [8].

The questionnaire consisted of three main sections. The first section covered participants' demographic and personal information as well as the type, duration and frequency of sports activities. The second section included questions about any previously experienced sports related dental injuries. The third section covered participants' knowledge and attitude toward and management of sports-related dental injuries.

Results

A total of 423 sport participants have responded to the questionnaire. 70 participants were excluded as they were undergoing orthodontic treatment. Only 353 participants met the inclusion criteria and involved in the current study statistical analysis. No association was found between the level of education and occupation and knowledge of availability of protective mouthguards. However, statistically significant association was found between gender and knowledge where females had more knowledge on the availability of protective mouthguards than males ($p=0.001$) and type of sport and knowledge where participants who run, play football and swim showed higher rates of knowledge than others ($p=0.021$). The use of device was not found to be associated with gender, level of education, occupation or type of sport. Moreover, no association between type of sport and injury nor its management (Tables 1-4) [9-11].

Table 1: Demographic data.

Gender	N (%)	Mean (SD)
Male	154 (43.6)	24 (5.1)
Female	199 (56.4)	22 (4.9)
Total	353	
Education level	N	(%)
Intermediate school	6	(1.7)
High school	117	(33.1)
University	230	(65.2)
Total	353	(100)
Occupation	N	(%)
Student	222	(62.9)
Working in government	40	(11.3)
Working in private	67	(19)
Do not work	24	(6.8)
Total	353	(100)
Type of sports	N	(%)
Running	235	(22.2)
Body building	207	(19.5)
Cardio exercises	148	(14)
Swimming	125	(11.8)
Football	80	(7.5)
Crossfit	79	(7.5)
Boxing	45	(4.2)
Basketball	34	(3.2)
Martial art	23	(2.2)
Other (Tennis, Ping-Pong, Skiing ... etc.)	84	(8)
Total	1060	(100)

Table 2: Association between gender and knowledge of protective devices.

Gender	Yes	No
Male	84%	16%
Female	68%	32%
Note: (P=0.001)		

Table 3: Association between type of sport and knowledge of protective devices.

Type of sports	Yes (%)	No (%)
Running	170 (72)	65 (28)
Body building	163 (79)	44 (21)
Cardio exercises	113 (76)	35 (24)
Swimming	86 (69)	39 (31)
Football	63 (79)	17 (21)
Crossfit	61 (77)	18 (23)
Boxing*	36 (80)	9 (20)
Basketball	26 (76)	8 (24)
Martial art**	21 (91)	2 (9)
Other (Tennis, Ping-Pong, Skiing ... etc.)	60 (71)	24 (29)
Note: * (P=0.01); **(P=0.001)		

Table 4: Comparing the type of sport and use of protective devices.

Type of sports	Yes (%)	No (%)	Sometimes (%)
Running	2 (1)	224 (95)	9 (4)
Body building	3 (1)	194 (94)	10 (5)
Cardio exercises	3 (2)	142 (96)	3 (2)
Swimming	3 (2)	117 (94)	5 (4)
Football	1 (1)	76 (95)	3 (4)
Crossfit	2 (3)	69 (87)	8 (10)
Boxing*	6 (13)	31 (69)	8 (18)
Basketball	2 (6)	29 (85)	3 (9)
Martial art**	3 (13)	15 (65)	5 (22)
Other (Tennis, Ping-Pong, Skiing ... etc.)	2 (2)	79 (94)	3 (4)
Note: * (P=0.01); ** (P=0.001)			

Discussion

Orofacial injuries are among the most common injuries in sports participants. Studies showed that 13%-39% of dental injuries are sports-related. American dental association estimate that 20,000 injuries each year can be prevented using mouthguards. The study showed that males had more knowledge than females regarding the knowledge of mouthguards in Riyadh. In 2016 a pilot survey conducted in Eastern region in Saudi Arabia showed that 34% used mouthguards. Although, in Riyadh our study revealed that only 5% use mouthguards where 3% used them sometimes only. Martial arts participants were found to be the highest participants using mouthguards (35%) after that boxing participant's became the second (31%). In U.S.A the use of mouth-guards is mandatory in boxing. However, in Riyadh it was not required but our study revealed that boxing participants had more knowledge about mouth guard. The use of mouthguard has been long proven to help in preventing and/or reducing their incidence [12].

In 2009 a study conducted in Turkey showed that soccer has been the most reason for injuries and also lately, as a preventive precaution, mouth guard and faceguard have proven to be valuable in reducing injuries. However, there was another study in 2015 also in Turkey reveled that falls and collisions with people or objects which are direct contact sports are the main cause of dental injuries [13].

Conclusion

Within the study limitations, the findings show significant inadequate knowledge among Riyadh city sports participants regarding mouthguard usage as a protective measure. However, the findings of this study may contribute the sports participants for implication towards their use of mouthguards reducing the prevalence of orofacial injuries.

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