



**Knowledge and Attitude of Benghazi
Contact Sport coaches about Sport –
Related Dental Emergencies and
Prevention**

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LIST OF ABBREVIATION

WHO	World Health Origination
TDIs	Traumatic Dental Injuries
MG	Mouthguard
IADT	International Association of Dental Traumatology
APA	American Psychologist Association
TMJ	Tempromandibular Joint
SES	Socio-economic state
ICD	International Classification of Disease
ICD-DA Stomatology	International Classification of Disease to Dentistry and Stomatology
HBSS	Hanks Balanced Storage Media
ADA	American Dental Association
ASTM	American Society for Testing and Material
ASD	International Academy for Sport Dentistry
RA	Research Assistant

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Abstract

Aim: Traumatic dental injuries (TDI) are commonly seen in contact sport players. Therefore, knowledge and awareness of coaches on how to manage and prevent TDIs is crucial for minimizing unwanted consequences. The aim of this study is to explore the experiences of contact sport coaches in the city of Benghazi about TDIs and their prevention.

Material and Methods: a cross-sectional survey was carried out among all reachable contact sport coaches in public and private sports centers in Benghazi. A paper-based self-administrated questionnaire consisted of 26 question about knowledge, experience and attitude towards TDIs and prevention methods was distributed to all participants. The data was analyzed using descriptive and bivariate statistics, at p value ≤ 0.05

Results: 151 out of 250 contact sports coaches returned a completed questionnaire, aged between 22-73 years old. The majority of coaches (112 ,74%) have seen orofacial injuries in their players during their coaching career compared with only (71, 47%) whose personally experienced these injuries ,with the face injury being the most seen and experienced one. The greater part of coaches (70,46.4%) reported wrapping the avulsed tooth with handkerchief or gauze and only one participant would preserve the tooth in milk and four would replant the tooth. The majority of coaches (135,89.4%) knew what is mouthguard, but just above the half of them (81,53.6%) would recommend it to their athlete. Less than half of coaches (62, 41.1%) received previous education on TDIs in sport.

Conclusion: The study showed that orofacial injuries are commonly a crossed by coaches. However, a low level of knowledge about sport-related dental emergency procedure and prevention methods was observed among Benghazi contact sport coaches. Educational programs should be carried out in different sport centers to increase their awareness and attitude toward dental injury management and prevention procedures.

Chapter 1

1 Introduction

The World Health Organization (WHO) considered physical activities and sports as essential for healthy development of children and adolescent and their physical and psychological wellbeing⁽¹⁾. Health is defined as the state of physical, psychological and social well-being and not merely the absence of disease. Engagement in sports at younger age is more likely to persist throughout life and offers the children the chance to become self-confident, able to express themselves naturally and increase their social interaction and integration^(2, 3). Involvement in sports can also help in avoiding unhealthy behavior such as use of tobacco, alcohol and drug abuse and violent behavior as well as enhance the adoption of healthy behaviors such as dietary habits and safety practices⁽⁴⁾.

Children are at an inherent injury risk while participating in physical activities⁽⁵⁾. Of particular importance is dental and orofacial injuries resulting from participating in contact sports activities^(6, 7). A recent systematic review revealed that the prevalence of orofacial injuries among contact sports athletes varied between 7.1-80.1%⁽⁸⁾. Traumatic dental injuries (TDIs) are the fifth most prevalent disease^(9, 10). Many studies have reported that around 15% of contact sport players have experienced a TDIs^(11, 12).

Traumatic injuries are preventable provided that appropriate measures are taken to protect oro-facial region. A recent systematic review revealed that wearing a mouthguard significantly decrease the dento-alveolar trauma among athletes of contact sports⁽¹³⁾. However, mouthguards are not popular among athletes because of breathing problems^(12, 14). Trainers and other people involved in contact sports are key players in preventing TDI, and should be aware of the immediate management of these injuries, which could improve the success of final treatment^(7, 15).

Among different types of dental trauma, avulsion has the greatest risk of function and esthetic impairment. Avulsion prognosis is believed to be usually poor because the survival rate of the avulsed tooth depends on extra-alveolar time and

appropriate transport media. In addition, inaccurate handling of the avulsed tooth may result in permanent damage to the periodontal ligament which causes external or replacement root resorption, that ultimately leading to tooth loss^(16, 17). Therefore, Coaches are considered as first line person in managing of TDIs in the training fields since the immediate manage of such injuries could improve the success of final treatment^(7, 15). However, a significant body of literature has shown that coaches do not always have the appropriate knowledge of handling TDIs⁽¹⁸⁾. A study of water polo coaches demonstrated that most of them have seen a dental injury in their coaching careers, but only 2% would maintain the avulsed tooth in appropriate storage media⁽¹⁹⁾.

TDIs causes several immediate and long term consequence^(20, 21). They mostly affect the permanent incisors which causes pain, loss of function, emotional and social impact that affect the athlete's well-being and leads to negative impact on their quality of life^(22, 23). Moreover, they required costly and complex treatments and long-term follow-up which causes burdens on family^(22, 24). The average cost of maxillofacial and dental injuries was more than double of all other bodily injuries occurred in contact sports⁽²⁵⁾. Avulsion is the most complicated type of dental injuries, as the delay in providing adequate emergency treatment can negatively affect the survival of the tooth and the well-being of the injured person. Therefore, it is imperative that both players and coaches have knowledge of the emergency management and the prevention of TDIs^(26, 27).

Libya is a country which has been experiencing ongoing unrest since 2011, especially in the city of Benghazi which is the second-largest city was the most affected by war since 2014. The city in recent years has recovered from wars and witnessed economic prosperity in different city sectors. Notably, there is an increase in the number of sports centers for children and adolescent. Therefore, it is possible that the incidence of TDI is increased. In a recent survey of TDI in Benghazi school children, 10.3% of twelve years old suffered from TDI and most of these injuries were due to falling⁽²⁸⁾. This emphasizes the importance of developing an effective prevention programs and educate

guardians in different setting about dental emergency management procedures⁽²⁹⁻³¹⁾. However, it is unclear to what extent are the coaches in sports centers in Benghazi are prepared to handle dental trauma emergencies. Therefore, assessing the knowledge and attitudes of Benghazi contact sports coaches regarding dental trauma is the first step to establish education programs and to develop baseline data for program evaluation.

Chapter 2

2 Literature review

2.1 Definition of Traumatic Dental Injuries (TDIs):

Trauma is a Greek word, it means an injury or damage to person's body due to external violence or accident⁽³²⁾. However, according to American Psychologist Association (APA), It refers to an emotional response to a terrible event such as, accident or natural disaster. Therefore, trauma could be used in two different context, physical and emotional⁽³³⁾.

The WHO defined dental injuries as fractures, luxations, and avulsions of teeth and fractures of the mandible or maxilla. Soft tissue oral injuries, Jaw contusions and temporomandibular joint (TMJ) trauma, were not included because of the variability of injury classification⁽³⁴⁾. In contrast, lip and oral mucosal lacerations, jaw fractures, TMJ cartilage injuries, and concussions were included as TDIs in another classification⁽³⁵⁾. Similarly, orofacial injuries have also been defined inconsistently in the literature. In one classification, soft tissue injuries (lip, tongue, or cheek), bruised face, loose teeth, broken teeth, and facial fractures were included as orofacial injuries⁽³⁶⁾. However, in other system, dental, dentoalveolar, intraoral, and perioral lacerations and jaw fractures were identified as orofacial injury⁽³⁷⁾. This lack of a universally accepted definition of dental injury creates difficulties in terms of data collection, analysis, and reporting. However, Dental, orofacial, and maxillofacial injuries are often treated as equal and interchangeable definitions to support varied opinions regarding injury prevention and treatment⁽³⁸⁾.

2.2 Prevalence of traumatic dental injuries:

TDIs are the most fifth prevalent disease worldwide. Although oral cavity compromise only 1% of the whole body, oral injuries account for 5% of all bodily injuries. It has been showed that more than one billion people have had TDI⁽³⁹⁾. TDIs are recognized as one of the main causes for tooth lost which increasingly receive

attention as prevalence of dental caries declined in western countries⁽²⁴⁾. In recent systematic review, revealed that world TDIs prevalence is 15.2 % for permanent teeth and 22.7% for primary teeth⁽²⁰⁾. However, in other literatures, permanent teeth were more prone to TDIs (58.6%) than primary teeth (36.8%)^(40, 41). Nevertheless, the prevalence of TDIs differs widely within and across nations, ranging from 2.4%⁽⁴²⁾ to 58.6%⁽⁴³⁾. For example, In European states, the prevalence of TDI was reported to be between 12.6%⁽⁴⁴⁾ and 45.6%⁽⁴⁵⁾. In East Asian, low prevalence of TDIs was reported in Taiwan was 3.1% in eight-year-olds⁽⁴⁶⁾, and 4.1% among Malaysian adolescents⁽⁴⁷⁾, which much lower than what is reported in Japan 21.8%⁽⁴⁸⁾. In Middle East and Africa, prevalence of TDIs was ranging from 5.1% in Baghdad⁽⁴⁹⁾ to 34.3% in Saudi Arabia⁽⁵⁰⁾. In Libya, 10.3% of 12 years old Benghazi school children suffered from TDI⁽²⁸⁾. The wide variations in TDI prevalence are attributed to methodological variations as well as contextual factors such as public health programs and application of safety measures.

2.3 Etiology and risk factors of Traumatic Dental Injuries:

Dental trauma can result from direct (in which tooth itself get hits) or indirect (in which lower jaw forcefully close against the upper jaw). This depends mainly on energy, resilience, angle and direction of the impacting object. Direct trauma results mainly in injury to anterior teeth while indirect trauma will cause injuries to premolars and molars⁽²⁷⁾.

Haddon's matrix has remarkably change the concept of injuries, as he emphasizes that causation of injury is complex and include physical and social environmental factors⁽⁵¹⁾. This framework pays more attention to physical and social characteristic and the influence of these factors on individuals behaviors, which can either increase or decrease risk of certain injury^(51, 52). This concept can be applied to determine the TDIs risk factors as most of literature focus on biological factors such as overjet, lip coverage and discard behavioral, social and environmental factors⁽⁵³⁾.

Therefore, based on Haddon framework, risk factors of TDIs can be classified to socio-demographic (gender, age, socio-economic status), biological (lip coverage, overjet), and behavioral (sport activities, risk taking behavioral)⁽⁵⁴⁾.

TDIs has been linked to demographic characteristics. For example, a sizable body of literature suggested that gender is related to TDIs prevalence, with boys more prone to TDIs than girls⁽⁵⁵⁻⁵⁷⁾. This chimes with the finding of the Libyan study which showed that boys had more TDIs than girls in 12 years old Libyan school children⁽²⁸⁾. Conversely. The relation between age and TDIs was not consistent in the dental trauma literature. Positive association^(43, 58, 59), negative association⁽⁶⁰⁾, or no association between TDIs and age^(61, 62), has been reported.

Environmental determinants” such as socioeconomic state (SES) plays an important role in oral health including TDIs^(63, 64). TDIs increase among families with higher SES^(43, 58, 65). In contrast, increased risk of luxation and avulsion injuries were observed among unemployed and prisoners, while higher social class male employees had a decreased risk⁽⁶⁶⁾. In addition, an inverse relation⁽⁶⁷⁾, and no significant relation between TDIs and SES^(28, 42, 63), were reported.

Biological factors such as, overjet and lip coverage play a significant role in the etiology of TDIs. There is evidence that children with overjet more than 3mm carries a risk of sustaining a TDIs^(68, 69). Other studies suggest that overjet greater than 5mm were more prone to dental injuries^(44, 58). Moreover, a global systematic review and meta-analysis in 2015 showed that increased overjet contributed to over two hundred million injuries to anterior teeth among children, adolescent and adults⁽³⁹⁾. Likewise, many studies found an association between TDIs and incompetent lips or even shorter upper lips in children^(56, 58, 70).

Risk taking behaviors such as, traffic accidents related injuries, heavy drinking and driving without a seatbelt are considered contributing factors to TDIs⁽⁷¹⁻⁷³⁾. However, these behaviors are usually aggregated together. Previous researches reported

that adolescents who were a drunk driver were less likely to use a seat belt, more likely to smoke, more likely to drink alcohol⁽⁷⁴⁾.

2.4 Classification of traumatic dental injuries:

The pediatric dentist Ellis was the first dentist to promote a universal dental injuries classification⁽⁷⁵⁾. After that numerous classification systems have been introduced for traumatic dental injuries based on different factors, such as etiology, anatomy, pathology or therapeutic considerations^(27, 75, 76). Consequently, this variation has added contradiction and confusion when comparing and analyzing researches related to dental injuries. Evidently, there is no suitable classification system for diagnosis of dental injuries that could be applied to epidemiological surveys, because they might need more tools for definitive diagnosis, for instance, radiographic examination and pulp vitality test. A systematic review by Feliciano and de Franca Caldas (2006), revealed that the most frequently used dental injury classification system in the literature was the descriptive classification by Andreasen's (32%), followed by Ellis' (14%) a simplified classification system, based on a numerical and anatomic structure. Although the Ellis classification is found to be the most suitable classification in epidemiology, it groups many injuries together and allows for subjective interpretation by including broad terms such as simple or extensive fractures⁽⁷⁷⁾.

Moreover, the newest and most specific version of the International Classification of Diseases (ICD) to Dentistry which was released in (1995). The application of the International Classification of Diseases to Dentistry and Stomatology: ICD-DA, third version (WHO). This classification includes injuries to the teeth, supporting structures, gingival and oral mucosa and is based on anatomical, therapeutic and prognostic considerations. This classification can be applied to both the primary and the permanent dentition⁽⁷⁸⁾. It provides a coherent system for coding and classifying data on dental injuries that give a detailed diagnosis and standardized recording for each individual and facilitate comparison data at an International level. This system is valuable to a wide

variety of users, from governments collecting basic data to individual researchers, and lecturers⁽⁷⁷⁾.(Appendix I)

2.5 Sport-related traumatic dental injuries:

The word sport comes from an old combinations of words that literally meant “to divert away from work or stress⁽⁷⁹⁾. Contact sports are sports in which the participants present vigorous physical interaction with each other to prevent the opponent team from winning^(80, 81).The American Dental Association(ADA) and the International Academy for Sports Dentistry (ASD) determine a list of high risk sports that the use of mouthguards was mandatory, and even though sports as bicycling, skateboarding were considered individual sports , were mentioned there^(82, 83).

A detailed description matrix called ‘predictive index for sports-related traumatic injuries’. By using this matrix, sport activities can be classified to contact and non-contact sports according to intensity and velocity of the sport. Furthermore, each of these two dimensions can be further classified into three levels, low, moderate and high. This classification would help in predication of sport related traumatic injuries, once each sport is placed in the right category. For example, football is a high intensity and velocity contact sport. Therefore, it is identified as a high risk category. On the other hand, tennis is a low risk non-contact sport with low intensity and velocity⁽⁸⁴⁾.

2.5.1 Prevalence of orofacial injuries in contact sports:

Amongst the risk taking behaviors is participation in contact sport which is a well-documented risk factor for orofacial injuries^(6, 7). Worldwide, there is an increase in number of participants in vigorous physical activities and contact sports. Along the numerous merits of sporting , participating in such activities brings the risk of dental and orofacial injuries^(6, 7). A recent systematic review revealed that 30% of contact sports players had dentofacial injuries. Dental injuries alone accounted for 19.61 % of all reported injuries⁽²⁶⁾. Sport- related dental injuries can affect both hard and soft tissues

depending on anatomical location as well as the force and direction of object^(85, 86). Laceration and abrasion are the most common types of soft tissue injuries and mostly affect lips, chin and cheek. Likewise, zygomaticomaxillary (tripod fracture) which involves separation of zygoma from the rest of the face is the most common type of facial fracture⁽⁷⁾. Regarding dental injuries, maxillary central incisors are the most commonly affected teeth during sport activities due to anatomical location. Furthermore, uncomplicated crown fracture are the most common types of fracture⁽⁸⁷⁾.

Among different types of dental injuries, Avulsion is considered a real dental emergency that carries the greatest risk of aesthetic and functional impairment. It represent about 0.5%-16% of all TDIs and account for 2-16% of all sport injuries^(7, 27). Maxillary central incisors followed by mandibular central incisors are the most common affected teeth by avulsion. Moreover, this type of injury is more frequent in young people due to higher bone resilience and looseness of periodontal ligaments^(27, 88).

When considering each sport separately, the prevalence differs according to sports types, modalities and velocity of impact between players⁽⁸⁹⁾. A recent systematic review with meta-analysis which included a total of 4933 players from five different contact sports found that rugby had the highest percent of TDIs with 37.36%, followed by basketball, handball and field hockey with 27.26%, 24.59% and 19.07% respectively and finally soccer had the lowest percent of TDIs among player at 9.49%⁽²⁶⁾. Male are more affected by sports-related TDIs than female⁽⁹⁰⁾. Furthermore, most of sport dental injuries resulted from falling or collision with other players^(91, 92).

2.5.2 Previous studies about dental emergency awareness and prevention Procedure among contact sports coaches:

A considerable amount of literature has been published revealing the inadequate level of knowledge of contact sports coaches when faced with a dental emergency. A study of Croatian taekwondo coaches demonstrated low level of knowledge about dental emergency⁽²⁹⁾. A survey included Swiss basketball players and

coaches showed unsatisfactory awareness of the procedure following a dental trauma among both groups⁽¹⁸⁾. Furthermore, a recent systematic review showed the insufficient level of knowledge concerning dental emergency globally, particularly among athletes, school sports/physical education teachers and sports students⁽⁹³⁾.

Children guardians such as sports coaches, must have adequate awareness of dental emergency, as immediate management of some sport injuries could improve the prognosis and minimize the psychological and physiological damage after trauma⁽⁵²⁾. For example, replantation of avulsed tooth by nearby person to the injured child will foster the prognosis as it will preserve the vitality of periodontal ligament and prevent long term complications such as ankylosis and root resorption^(27, 88). Moreover, using a suitable storage such as, Hanks balanced storage media (HBSS) or milk that has been recommended by the International Association of Dental Traumatology (IADT), would be an alternative option to preserve the tooth if there is no qualified person in field whose capable to replant the tooth^(27, 88).

Several studies reported inappropriate management protocol of avulsed tooth by contact sport coaches. For instance, only 2% of waterpolo coaches would maintain the avulsed tooth in saline solution before its replantation and none of the coaches would use milk as storage media for avulsed tooth⁽¹⁹⁾. Another study among taekwondo athletes in Saudi Arabia revealed that only eight participants knew the possibility of replant of the avulsed tooth⁽⁹⁴⁾. Moreover, in a research among Croatian Taekwondo coaches found that about 50% of all interviewed coaches were familiar of the possibility of replanting the avulsed teeth. Even though this is an acceptable percent, it is indicate that not all coaches were equally informed about emergency procedures⁽²⁹⁾. Furthermore, a study included Iranian martial art athletes concluded that only 5.1% of them would replant the avulsed tooth before going to dentist and that the majority of them would wrap the tooth in handkerchief rather than using a proper storage media⁽⁹⁵⁾.

Although the ADA and ASD have recommended the use of mouthguard (MG) in a list of high risk sports^(82, 83), many literatures have reported the inappropriate use of

it by contact sports players. For example , only eight (3%) of French handball players used MG during playing even though the majority of them 95% considered it as effective tool in preventing orofacial injuries⁽⁹⁶⁾. In another study in Japan , only 0.8% of soccer players and 24.1% of rugby players used MG despite the fact that oral injuries among these players were 32.3% and 56.5% respectively⁽⁹⁷⁾ . Moreover , a study among water polo coaches and sports managers in Catalonia reported that 18% of the coaches believed that MG use should be mandatory, in contrast to 50% of the sports club managers. In addition , only 10% of coaches would recommend the use of MG to their players⁽⁹⁸⁾.

In Arabic countries including Libya, there is no enough literature regarding knowledge of contact sports coaches about dental emergencies. However. In a previous study in Saudi Arabia reveled that emergency management of dental trauma was inadequate among school sports teachers even though about 80.8% of them were aware about possibilities of replantation of avulsed tooth ⁽⁹⁹⁾. Moreover , in another study in the same country reported similar result regarding taekwondo athletes knowledge about dental emergency management⁽¹⁰⁰⁾. This agreed with other researches in Arabic countries showed that emergency management of TDIs was low among children guardian such as teachers and coaches ^(30, 101).Moreover, a recent systematic review revealed that there is insufficient knowledge regarding dental emergency procedure among Non-dental Health Care Professional worldwide⁽¹⁰²⁾.

2.5.3 Prevention of sport related dental injuries :

Most recent studies demonstrate that dental trauma incidence remains unchanged and also being relatively high among children and adult⁽¹⁰³⁾. Moreover, participating in contact sports has an increased risk of gaining orofacial and dental injuries^(6, 7). However ,sport-related TDIs are preventable⁽⁷⁾. Therefore, appropriate education of coaches and players about emergency management of dental trauma and prevention methods should be included in sport centers.

2.5.3.1 Role of mouthguard (MG):

The American Society for Testing and Materials (ASTM) defines mouthguard as ‘a resilient device or appliance fitted inside the mouth to decrease oral injuries, particularly to teeth and surrounding structures’⁽⁸¹⁾. MG classified to three main types according to ASTM⁽¹⁰⁴⁾:

2.5.3.1.1 Stock mouthguard :

They are readymade and available in different size in which athlete can choose the best fitted size. They are not specially fabricated to individual’s mouth and can be found in sports shops, department stores and chemists. They are considered inexpensive. There are three main types of stock MGs:

- A. Single jaw:** This type could be fabricated to upper and lower jaws. Nevertheless, it is usually constricted to the upper jaw as it more susceptible to trauma. They do not provide the best protection as well as poor retention characteristic⁽¹⁰⁵⁾.
- B. Bimaxillary:** This type is a single appliance that covers the upper and lower jaws together. Therefore, provide protection for both of them. Because it is one piece appliance, it is bulky and interfere with speaking⁽¹⁰⁵⁾.
- C. Orthoguards:** This type is specially fabricated for patient with fixed orthodontic appliance to overcome some limitations of others MGs. on the fitting surface they have a channel to accommodate the fixed appliances and any tooth movement. These MGs may need to be changed as the orthodontic treatment progresses, depending on the extent of tooth movement planned⁽¹⁰⁶⁾.

2.5.3.1.2 Mouth-formed mouth guard:

They are commonly named ‘boil-and-bite’ they are made from thermoplastic material that when immersed in boiling water became soft and mouldable. Then it is

formed in patient mouth by applying occlusal pressure and soft tissue moulding to record occlusion as well as adaptation to hard and soft tissue structure. They have better retention than the stock ones and provide average protection for the athlete. They are the most commonly used type among athletes⁽¹⁰⁷⁾.

2.5.3.1.3 Custom-made mouth guard:

These MGs usually made from polyethylene vinyl acetate. A dentist intervention with laboratory work is needed to fabricate this type. They are superior to other mentioned types as they provide the best retention and protection for the athlete, due to being specially fabricated to individuals. However, they are more expensive and require a multiple visits to the dentist⁽¹⁰⁸⁾.

Since the early twentieth century, MGs have been promoted as a way to reduce the incidence of orofacial injuries. The ADA and ASD have introduced a guideline emphasizing the use of MG in certain high risk sports^(82, 83). As it not only prevents TDIs but also reduces the severity of injuries by covering all teeth and discrete the transmitted force to the site of impact. Furthermore, it prevents inhalation or ingestion of any fractured or loosened teeth by maintaining them in their place⁽¹⁰⁵⁾.

Despite this, utilization of MG by contact sports coaches and athletes was low in numerous studies. A study included basketball players reported that only 5.1% of them used MG during sports activities⁽¹⁸⁾. Moreover, in another survey among 229 young athletes in four contact sports water polo, karate, taekwondo and handball and found out that even though participants considered MG an efficient tool in prevention of TDIs during sport, only 41% used it⁽¹¹⁾. In addition, a study among water polo coaches revealed that only thirty five (68.6%) of them would recommend MG for their athletes despite the fact that about forty six (90.2%) of them had knowledge about the importance of it in preventing TDIs⁽¹⁹⁾. Many literatures explain that the reluctance to wear MG by contact sports players is due to breathing and speaking problems or aesthetic concern⁽¹⁰⁵⁾. This indicates the low level of knowledge among athletes and

coaches about MGs and emphasis the important of increasing awareness among them.

2.5.3.2 Role of dentist in increasing awareness:

The Dentist has a significant role toward his community to provide education about dental trauma prevention specifically how to prevent sports-related oral and maxillofacial trauma^(108, 109). Therefore an educational programs about important of MGs should be carried out in sports centers targeting coaches, instructors and managers of sports facilities. This knowledge then could be moved to players and their families ,as coaches has an influence on their athletes⁽¹¹⁰⁾. For example, Godwin et al, in his study on young football players revealed that coaches has a major influence on whether the players wear MG or not⁽¹¹¹⁾. A simple way of education is to display a posters about the important of MGs in prevention of TDIs as well as the education about the required criteria of a well-fitted mouthguard such as: comfort, fit and easy of speech and breath which all found in custom made type that was recommend by the ASD^{(112)(113, 114)}. For instance, a brochures which explain the different types of MGs and their advantages was published by the ADA⁽¹¹⁵⁾. Moreover, regulations and roles of MG wearing by athletes should be imposed in sports organizations which would help in decreasing the number of sport injuries. For example, there was a 43% drop in the number of dental trauma cases after wearing MG being mandatory in professional rugby union in New Zealand⁽¹¹⁶⁾.

Another important aspect is increasing awareness of coaches and players about dental emergency procedure, especially in case of avulsion, as the most important factor in success rate is extra-alveolar time. As mentioned before, immediate replantation is the best way to preserve the vitality of avulsed tooth and prevent long time complications^(27, 88). In another study, demonstrated that even though dentist had appropriate knowledge about management and prevention of avulsed tooth , there was a deficient in communication between dentist and population particularly with

participant of high contact sports⁽¹¹⁷⁾. Moreover, although “Tooth Rescue Box “ is an available and cheap product that could preserve the tooth vitality up to 72 hours⁽¹¹⁸⁾, some sport participants did not know this information⁽¹⁸⁾. Therefore, educational programs such as lectures and workshops should be given by dentist in sports centers to increase awareness and provide a basic step which coaches should follow in case of avulsion. Moreover, International organizations play an important role in education. For example , the IADR carried out a campaign included a multi-language poster entitled ‘Save Your Tooth to increase awareness of public about avulsion⁽¹¹⁹⁾.

In Libya, as the country still recovering from war crisis, there was a focus to increase community awareness about oral health specially after launching of Libyan Section of IADR (International Association For Dental Research) in 2015 and also the establishment of Libyan Association of Dental Public Health in 2019. These organizations did great efforts in increasing oral health awareness. However, educational efforts require baseline data to inform educational programs and enable evaluation.

Chapter 3

3 Aims and Objectives

3.1 Aim

To explore the experiences of contact sport coaches in the city of Benghazi about traumatic dental injuries

3.2 Objective of the study:

1. To describe distribution of TDIs as experienced by contact sport coaches
2. To assess knowledge and attitude of the Libyan contact sport coaches about traumatic dental injuries.
3. To evaluate the awareness of the Libyan contact sport coaches about first aid dental emergency procedures
4. To assess the awareness of Libyan contact sport coaches about the prevention of traumatic dental injuries

Chapter 4

4 Materials and Methods

4.1 Overview

The present study aimed to assess the knowledge and attitude of the Libyan contact sports coaches in Benghazi during dental emergency injuries to overcome the barriers, reduce the complication and improve the outcome after tooth avulsion. The sports clubs in the Benghazi are widely spread and there is no website or group that allow approaching all the coaches electronically. Therefore, a paper-based self-administered questionnaire was used to answer the mentioned research questions.

4.2 Study design:

A cross-sectional survey was used in the present study. This design is a snapshot of a particular population at a given point of time. It is used to assess the relationship between variables, and to give baseline data for further researches and experiment⁽¹²⁰⁾. Therefore, such approach is appropriate reflect the Knowledge and Attitude of Libyan contact sports coaches about sport-related dental emergencies.

4.3 Setting:

The study was carried out in the city of Benghazi which is the second largest city in Libya. All public sport centers in Benghazi that were registered in the Libyan Ministry of Youth and Sport, Benghazi branch were targeted for data collection (Appendix II). After delivering invitation letter, twenty eight out of forty three public sport centers agreed to be part of the study. However, for private sport, only eleven private sport centers that were accessible were included in the study to cover the maximum number of contact sports coaches. This includes all sports that have been classified as high risk sports according to the ADA and the ASD which was founded in 1983. For example, football, volleyball, basketball, handball, rugby and karate^(82, 83).

4.4 Study population and sampling:

All contact sports coaches who fulfilled the inclusion criteria were invited to take part in the study by sending invitation letter supplemented by a consent form and an information sheet that explain the purpose of the study , along with paper-based questionnaire. The inclusion criteria involved being a contact sport coach, the sport center is registered in Ministry of youth and sport and the coach should be above eighteen years old. The exclusion criteria included a non-contact sport coaches, the center was not registered in Ministry of Youth and a Sport center and the coach is less than eighteen years old.

4.5 Data collection:

Data was collected by using a self-administered questionnaire that was developed from previous study⁽¹⁹⁾, during the year of 2021, in Benghazi city between June and August

4.5.1 Questionnaire Development:

According to the researcher's knowledge there is not any previous studies in Arabic countries or in Libya regarding the knowledge and attitude of contact sport coaches toward dental emergencies. Therefore, an English questionnaire that was used successfully in other studies was translated to Arabic language by the researcher and the supervisor. Taking in consideration the culture difference and variation in concept the questionnaire was translated to be simple and well-understood by individuals of different educational level.

After translations, the questionnaire was tested among group of public people and coaches. The researcher herself distributed the questionnaire among ten individuals from different educational level. To make sure that the questionnaire was fully understood among participants, they were asked to highlight any word or phrases which was not understood. The questionnaire was found to be simple,

well-understood and did not show any linguistic barrier among people from different scholastic level. Consequently, the Arabic version of questionnaire was adopted.

The final version of the questionnaire (Appendix III) had twenty six questions that were divided into five different sections. The first section contained eight questions about demographic data and the history of sport practicing and coaching experience. The second section covers coaches' personal experiences of dental injuries during sport activities. The third section consisted of five questions regarding coaches awareness of dental emergency procedures during sport activities. The fourth section had five questions regarding MG, and the last part of questionnaire had three questions that focused on the coaches' previous education about sports-related dental injuries and their preferences in relation to such education in the future.

4.5.2 Questionnaire administration:

The questionnaire was distributed by a well-trained Research Assistant (RA) who understand all parts of the questionnaire to make sure that they can respond to any clarifications related to it. The RA handled the questionnaire in person to all potential participants. The purpose of the study was explained to each coach and showed them the consent form and clarified that the participation of study was voluntary and that all information will be confidential.

To ensure coaches individual approach in answering the questions and to eradicate any side intervention or consultation during filling out the questionnaires, the RA was present while coaches were filing out the questionnaire to collect the questionnaire at the same time. To elevate the response rate, the target population were carefully selected by excluding coaches whose were less than eighteen years old which would eliminate the need for their caregiver consent. Moreover, the survey structure and outline were clear and specific and filling out time took less than five minutes.

4.6 Data analysis:

All data collected for the study were transformed by the author from the recording forms to data files in the computer, after being checked for completeness of responses. The data were entered by using a code number for each question and it was entered twice and verified by cross-matching of the two entries. Any errors found were checked against the recording forms. The data was then analyzed using statistical package for social science (SPSS version 25) software. Frequencies and percentages were used to describe sample profiles and responses to the questionnaire. Bivariate analysis using chi-square test was then applied at $p \leq 0.05$.

4.7 Ethical approval:

Ethical approval was obtained from Ethics Committee of Faculty of Dentistry of Benghazi University. Participation in the study was voluntary and coaches must signed an informed consent before starting , also all information was treated as confidential.

Chapter 5

5 Results

5.1 Sociodemographic Characteristics and coaching experience of Participants:

A total of 151 male contact sports coaches out of 250 returned complete questionnaire appropriate for analysis, giving a response rate of 60%. Table one shows the sociodemographic characteristics of respondents. The respondents' age ranged between 22 and 73 years of age, with an average of 40.1 ± 9.18 years. The majority of the respondent were coaches in public sport centers (113, 75%) and obtained a university degree (105, 70%). Just above the half of the coaches (78, 52%) had less than 5 years' experience of coaching.

Table 1: Sociodemographic characteristics of study participants

Variable		N (%)
Club category	Private	38(25.2)
	Public	113(74.8)
Coaching experience	5 years	78(51.7)
	10 years	41(27.2)
	15 years	32(21.2)
Education	University education	105(69.5)
	Less than University	46(30.5)
Age in years	Range	Mean \pm SD
	22-73	40.1 \pm 9.18

Figure one describes the distribution of coaches by sports they are currently training. The most common sport was football (116, 77%), followed by volleyball (9, 6%). On the other hand, the least coached sport was handball (4, 2.6%).

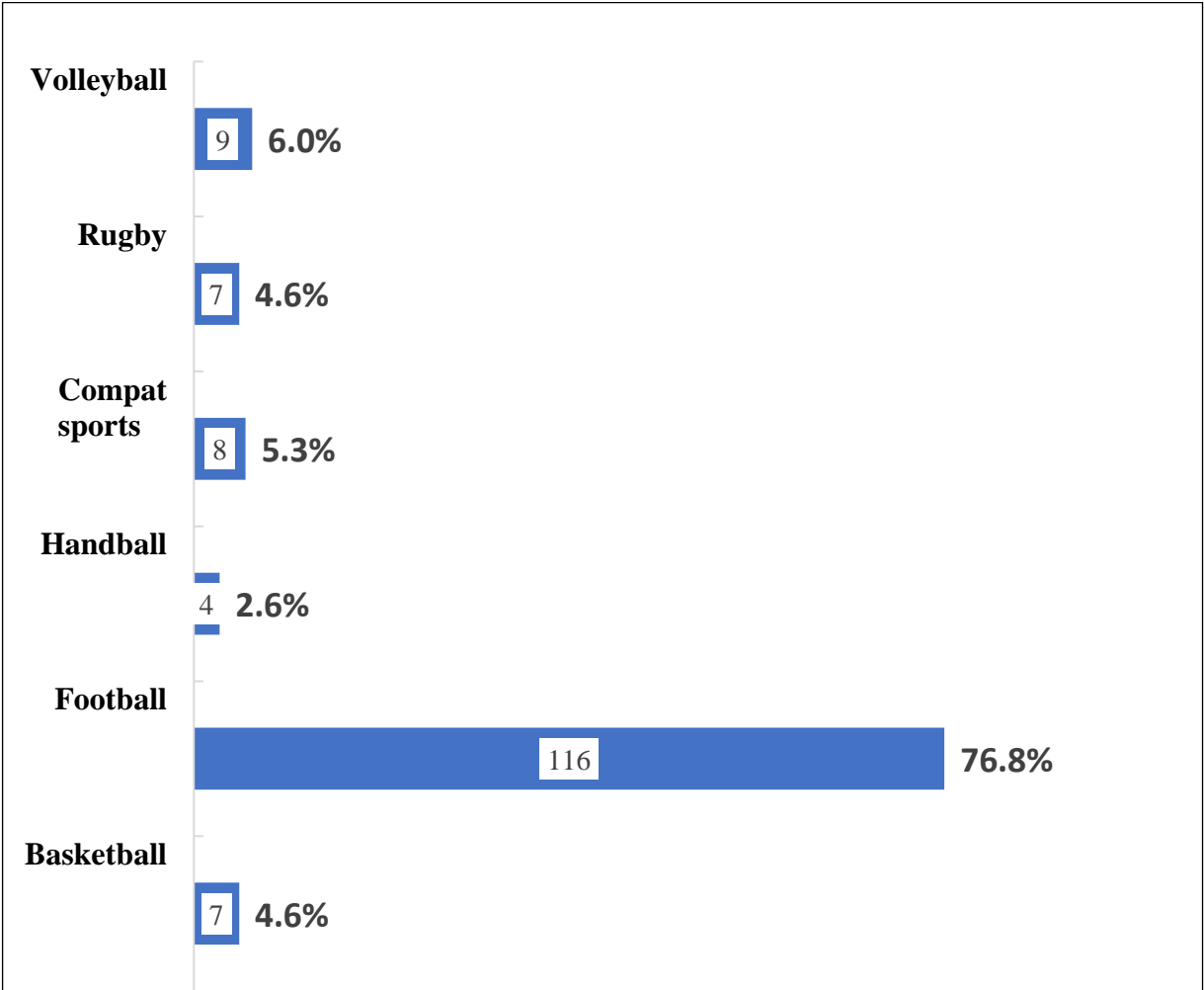


Figure 1: The distribution of coached sports

Figure two describes the distribution of sports that coaches have had played. The majority of respondents indicated that they used to play football (74%). Volleyball was the second most popular sport (6%). Nine coaches (6%) reported playing different sports. The least common sport were rugby and handball which played by three and four coaches, respectively. Half of the coaches indicated that they still play sports while 31% of them play sometimes and 19% coaches stopped play sport at all.

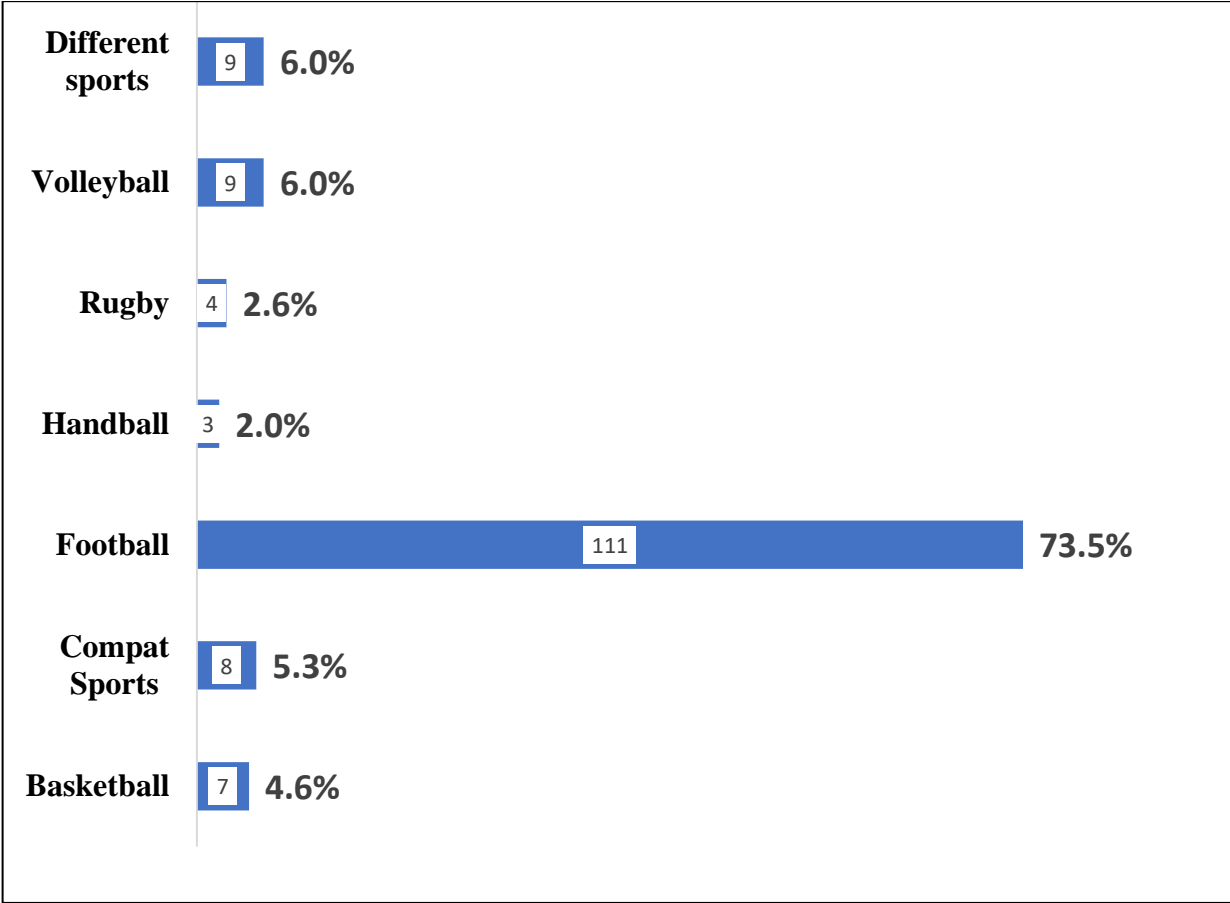


Figure 2: The distribution of sports played by coaches

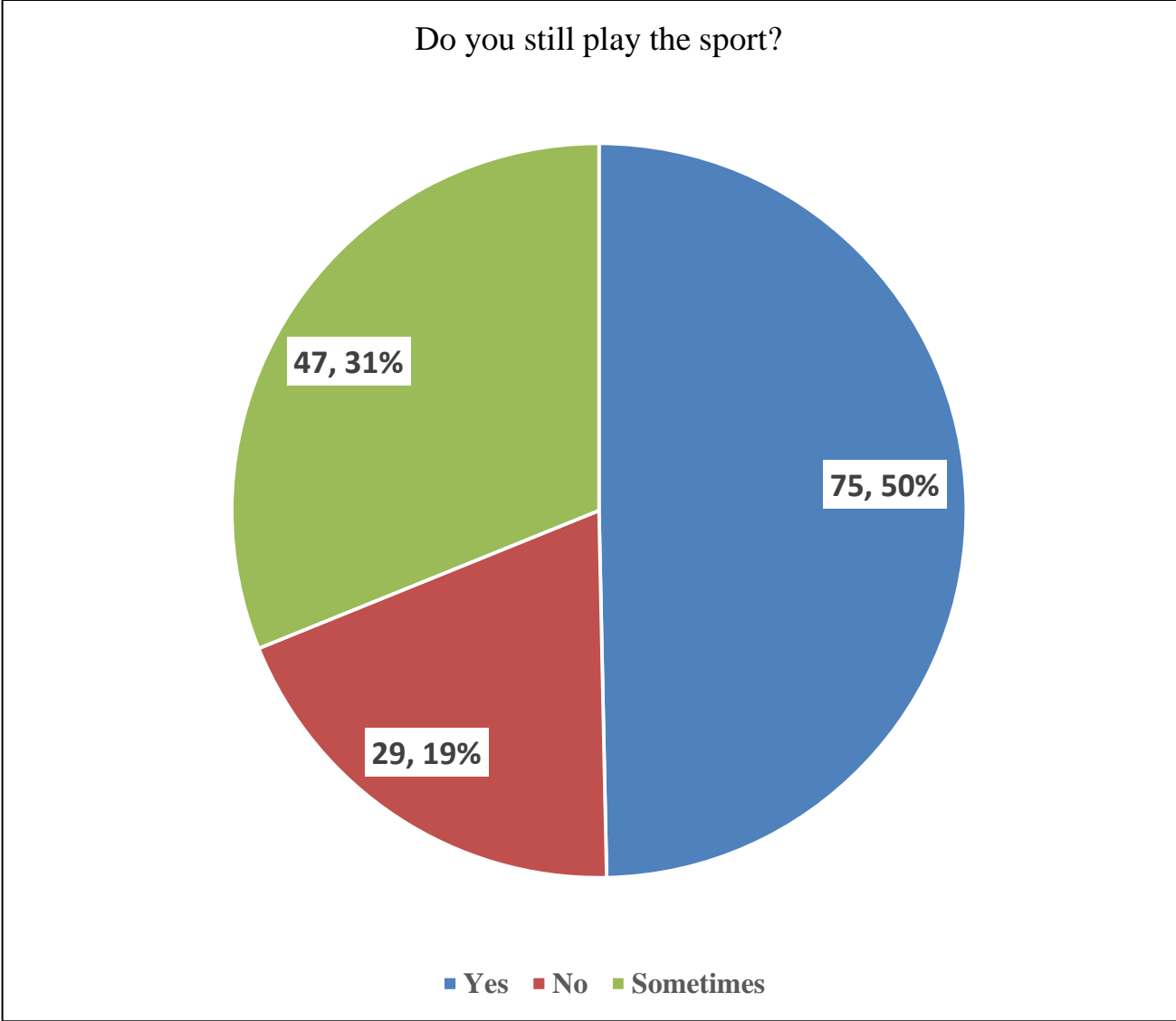


Figure 3: The proportion of coaches who still play sports

5.2 Coaches experience of TDIs

Figure four depicts the experienced and seen facial or dental injuries by the participants. It can be seen that less than half of the respondents reported experiencing injuries (47%) whereas the majority (74%) have seen these injuries in sports.

The respondents perceived prevalence of TDIs to be ranged between 10% to 90% with an average of 35%. The most seen and experience injuries were face injuries (44% and 70%, respectively). On the other hand, dental injuries were experienced by 23% of respondents and seen by 62% of them. Fractured teeth were the most commonly seen (34%) and experienced (14%) injury. Avulsion was the least experienced injury by the coaches (4, 2.6%) but luxation was the least seen by them (22, 14.6%).

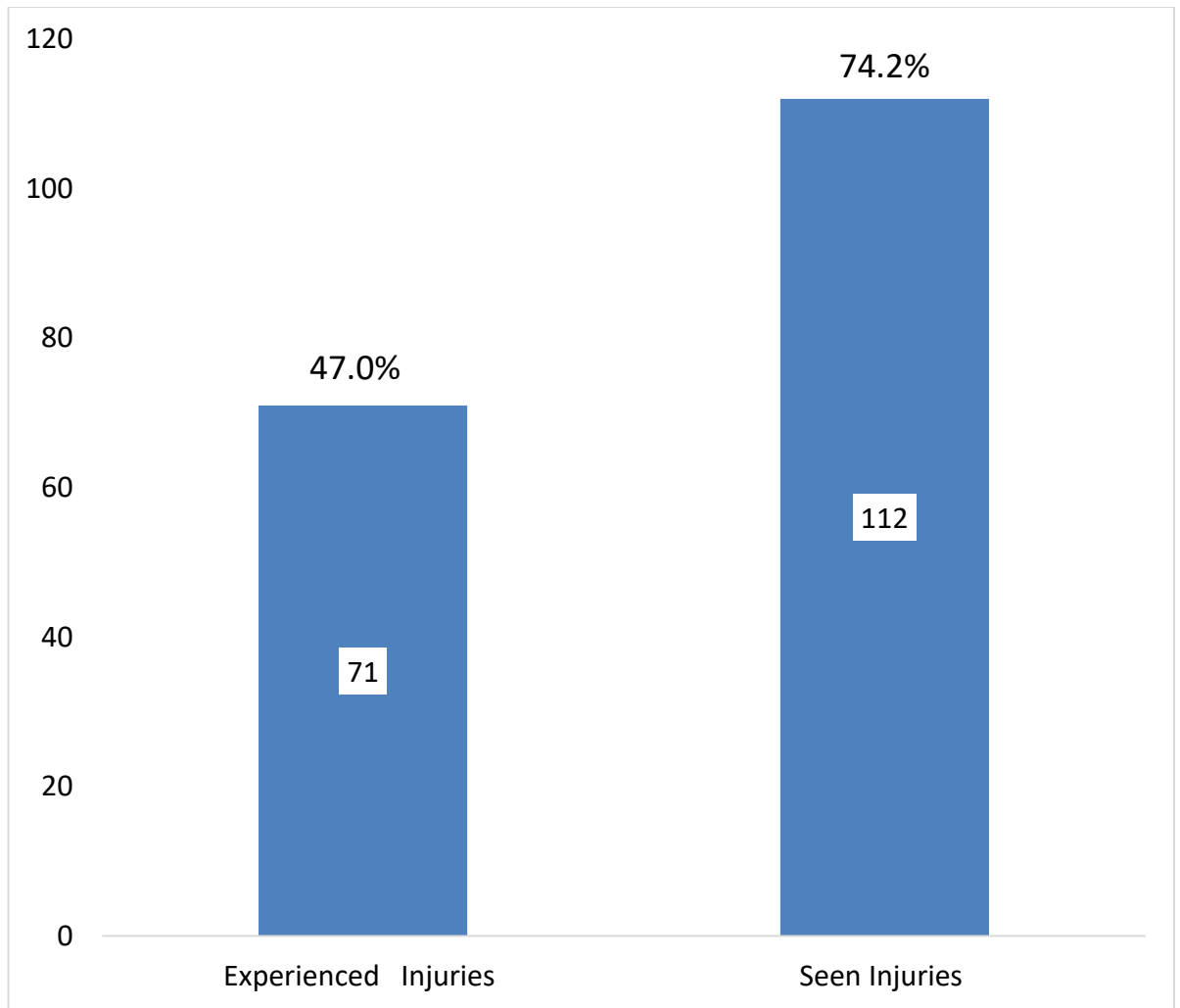


Figure 4: Experienced and seen injuries by coaches

Table 2: The distribution of facial and dental injuries experienced and seen by coaches

Variable	Statistics	
	Mean \pm SD	Min-Max
Perceived percentage of TDI in contact sports	35.36 \pm 21.74	10-90
Dental injuries during sport	Experienced Injuries N (%)	Seen Injuries N (%)
Injury in face	67(44.3)	105 (69.5)
Bruises in face	47 (31.1)	73 (48.3)
Wounds in face	22 (14.6)	78 (51.7)
Fracture in face	6(4.0)	23 (15.2)
Injury in teeth	35(23.2)	93 (61.6)
Fracture in teeth	21 (13.9)	51 (33.8)
Avulsion	4 (2.6)	27 (17.9)
Luxation	12 (7.9)	22 (14.6)

5.3 Management of TDIs

Figure 5 shows the responses on the question ‘what would you do if dental injury occurred during training’. More than half of coaches (55%) would take the child to nearest hospital, and 44% of them would call the team doctor. Only one respondent would contact the parent.

Tables three shows the responses to questions related to the management of avulsed tooth. Wrapping the tooth in clean handkerchief or gauze (46.4%) was the most chosen option. Following by ‘throwing the tooth’ (23.8%) and ‘cleaning the tooth’ (23.2%). One participant selected storing the tooth in milk and other two stored it in saline. Only seven coaches heard of storage media. Re-implanting the tooth was the choice of 2.6% of the respondents. Less than quarter (23.8%) would look for a broken tooth fragment and 5.3 % of respondents think it can be re-attached.

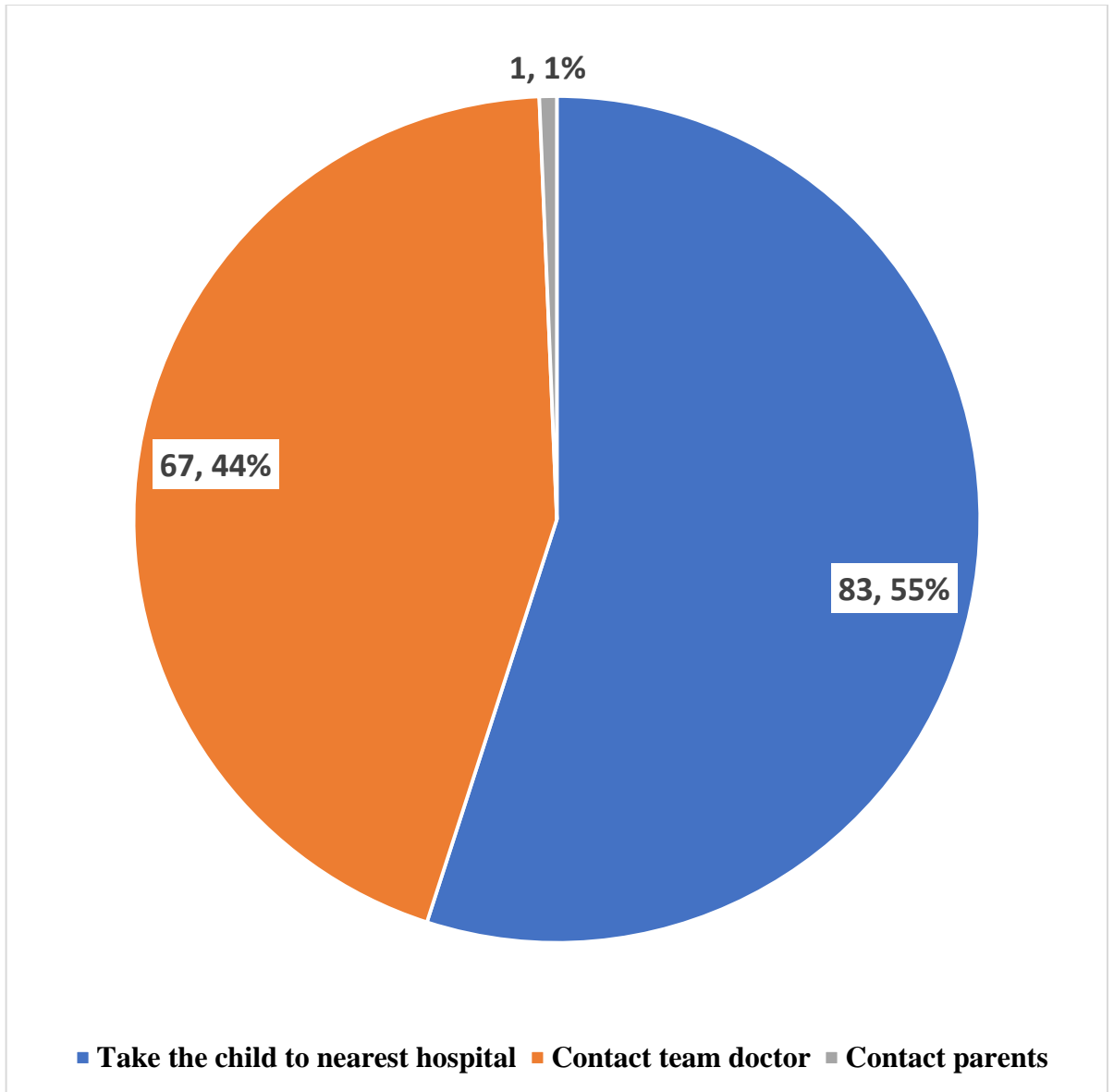


Figure 5: Response to traumatic injury during the training

Variable		N (%)
What would you do if tooth avulsed for your athlete	Throw the tooth away	36 (23.8)
	Clean the tooth under water	35(23.2)
	Wrap the tooth in clean handkerchief or gauze	70(46.4)
	Preserve the tooth in milk	1(0.7)
	Preserve the tooth in saline solution	2(1.3)
	Preserve the tooth in disinfectant	3(2.0)
	Re-implant the tooth	4(2.6)
If there is only part of tooth missing would look for it		36 (23.8)
Think broken fragment could be reattached		8 (5.3)
Heard of a storage media for avulsed tooth		7 (4.6)

Table 3: Management of avulsed and broken tooth

5.4 Awareness and attitude towards mouthguard

Table four describes the awareness and attitude of coaches towards the use of mouthguard. Most of coaches (135, 89.4%) knew what mouthguard is, but less than quarter (23.8%) used it as athletes. The most common reason for not using mouthguard were difficulties in breathing and believing it is not important (19.2%), and to lesser extent it was not available (16.6%). The majority of coaches consider mouthguard as an effective tool to prevent dental injuries (72%) and recommended its use for their players (54%)

Variable		N(%)
know mouthguard		135 (89.4)
Wore mouthguard as an athlete		36 (23.8)
Reasons for not wearing mouthguard	Causes difficulty in breathing or speaking	29 (19.2)
	Not available	25(16.6)
	Not important in this sport	29(19.2)
	Difficult to wear in this sport	2(1.3)
Recommend mouthguard for your players		81 (53.6)
Think mouthguard effective in preventing dental injuries		109 (72.2)

Table 4 : Awareness and attitude towards mouthguard

5.5 Education on sports related dental injuries

Table five shows the responses to previous education experiences on TDI in sports. Less than half of coaches received education on TDIs (62, 41%), mainly as lectures (68%). The majority of respondents prefer lectures (81%) over online education course.

Table 5: Education on sports related dental injuries

Variable		N(%)
Had education about sport relating dental injuries		62 (41.1)
What kind of education	Online education course	20 (32.3)
	Lectures	42 (67.7)
The best way for such education	Lecture	80.8 (80.8)
	Online education course	19.2 (19.2)

Chapter 6

6 Discussion

This study was set out to evaluate experiences of Benghazi contact sport coaches regarding sport-related dental emergency procedures. To authors' best of knowledge, this is the first study of its kind in the Libyan context. The data showed that orofacial injuries are common encounter in the Libyan contact sports. The majority of coaches (62%) seen such injuries among trainees and nearly quarter of them (23%) experience orofacial injuries themselves, mostly fractured teeth whereas avulsion was the least common TDIs. Similar findings have been observed in other studies conducted among water polo and taekwondo coaches^(19, 29, 94). This confirms both the high incidence rate of injuries in contact sports and the important role of contact sport coaches as the first individuals to intervene at accident site.

The results of current study showed a low level of knowledge about sport related dental emergency among Benghazi contact sport coaches. observation is consistent with the findings of studies conducted among contact sports coaches and demonstrated low levels of knowledge regarding TDIs^(19, 29, 94). These findings also accords with that of a recent systematic review that evaluated the knowledge of sports coaches and athletes and concluded that there is low self-belief and knowledge level in the majority of studies regarding TDIs and emergency procedures.⁽⁹³⁾ . Such low knowledge could be ascribed to the lack of appropriate education regarding dental emergencies

According to IADT, immediate replant of the avulsed tooth within one hour has the best prognosis as it would preserve the vitality of periodontal ligament and prevent long term complications⁽⁸⁸⁾. In the present study, only 4 participants indicated that they would replant the avulsed tooth. This is a very low proportion when compared to other studies which demonstrated that the majority of (78.6%) of handball coaches and more than half (52.7%) of taekwondo coaches and Swiss water polo players (54.9%) were aware of possibility of replantation of avulsed tooth^(12, 29, 121). On the other hand, some studies have reported similar results⁽⁹⁵⁾. For example, only eight participants knew the

possibility of replant the avulsed tooth in a study among taekwondo athletes in Saudi Arabia⁽¹⁰⁰⁾.

Moreover ,while a considerable proportion of coaches responded that they would wrap the tooth in handkerchief ,one participant reported he would use milk as storage media and a few of them would store in saline and have heard of storage media . These results are similar to previously reported study of water polo coaches in which the majority would use handkerchief or gauze to store the avulsed tooth and none of them would use milk as storage media⁽¹⁹⁾.In addition , coaches should be aware of “Tooth Rescue Box” as it is inexpensive and available product that would maintain the tooth vitality up to seventy two hours⁽¹¹⁸⁾. Regardless of this , only seven participants knew what is Tooth Rescue Box which is in accordance with other studies that revealed the same result^(18, 19, 121, 122).

Most of coaches in the present research believed in effectiveness of mouthguard in preventing sport-related dental injuries. Similar observations were reported in several previous studies conducted in different countries and among different contact sports coaches where MG is highly appreciated as a preventive tool^(11, 15, 19, 29, 98).However, just above half of them (53.6%) recommended it to their athletes which highlight the need to increase the knowledge of Libyan coaches about the important of MG in preventing sport-related dental injuries.

Previous studies regarding the cause of not using MG , found speaking and breathing problems were the main reasons^(29, 123) ,which is also confirmed in the current study as it is the most common reason along with believing that it is not important in sport (19.2%). Therefore ,dentist have a role in preventing dental injuries among athletes and coaches by promoting wearing of MG and education of coaches and players regarding emergency procedure and prevention of TDIs.

As the prevalence of TDIs vary worldwide with being mostly under-reported⁽⁹²⁾, education of coaches, teachers and parents regarding emergency procedure and

prevention is imperative. In a study among rugby players revealed that workshops including lectures were an effective method in increasing their awareness regarding TDIs emergency procedure and prevention methods⁽¹²⁴⁾. Moreover , education through lectures for different groups of professional including pediatrician has demonstrated a significant impact on their emergency management of avulsed tooth. ⁽¹²⁵⁾.

The current study demonstrated that less than half of the participants received education on TDIs management which was in the form of a lecture. It is unclear, from the present study, what were the contents of the lecture and how it was delivered. However, a previous study demonstrated that single lecture was ineffective in providing education about dental emergency management for school teachers⁽¹²⁶⁾. Moreover , a survey among physical education professional revealed that even though the confidence of professionals to perform tooth replantation was increased after the lecture, many of them did not feel they would be able to perform tooth replantation⁽¹²⁷⁾. Taking in consideration that the majority of participants in this study are interested in future education regarding dental injuries in form of lecture(80.8%), A continuous educational campaigns rather than single lecture are needed to reinforce the technical procedures of tooth replantation as the long term prognosis of avulsed tooth depends on immediate management , storage media and handling technique of the affected tooth^(27, 88).

Moreover, coaches should be informed about the important of mouthguard in preventing dental injuries and also that they should recommend custom made MG to their athletes as it has the best protection as well as provide comfort during playing according to ASD ^(112, 113). In the current study , the majority of coaches 77% were coaching football, which is the most popular sport in Libya. This sport carries a high risk of TDIs similar to other contact sports ^(122, 128).Moreover, the ADA and ASD included football as a high risk sport in which MG should be worn⁽⁸²⁾. In a recent systematic review revealed that MGs contribute in decreasing of TDIs among contact sports athletes⁽¹³⁾. Therefore , there should be a collaboration between Libyan dental syndicate , Libyan government and international organizations in providing educational programs to

extend the knowledge of coaches as well as Non- Dental Health Care Professional in Libya such as teachers and parent about emergency dental procedure and prevention of sport-related dental injuries.

As far as authors concerned, there is no other previous studies in Libya that have investigated the knowledge and attitude of Libyan contact sport coaches during dental emergencies. which is one of the main strength of this study as it would provide a baseline data for further researches in this filed, and for developing a well-structured program to educate coaches and players about dental emergency procedure.

On the other hand, the study has some limitations. First, the study is based on questionnaire which may be subjected to recall bias. Second, the questionnaire may not has reached all contact sport coaches as it was only distributed to sport centers that greed to be part of the study and also it was directed to coaches in sport centers only. Therefore, coaches in other institutions could not be part of this study for example sport coaches in schools. Finally, in the current study all 151 participants were males. However, we have little to do in order to minimize this bias because it is related to Libyan society's culture.

Chapter 7

7 Conclusion and Recommendations

7.1 Conclusion

The study concluded that :

- 1- Orofacial injuries are common encountered by coaches. Teeth fracture were the most seen and experience TDIs by coaches. Moreover, avulsion comes secondly as most seen injury by them.
- 2- knowledge and attitude about TDIs first aid management is low among participants. Majority of them did not know the basic steps for emergency management in case of avulsion and the best storage media.
- 3- Most of coaches knew what is mouthguard. However, just above the half of them would recommend it to their athletes

7.2 Recommendations

As the number of children and adolescent whose participate in sport activities increased recently in Libya .Consequently, TDIs is an expected result as part of contact sport activities. With minimum experience of the Benghazi sports coaches regard the TDIs, it seem to be mandatory to regulate a continuous educational programs to coaches as part of their professional seminaries in forms of lectures and workshops, which could be organized by athletic clubs or Libyan football federation. Furthermore, the Ministry of Youth and Sports and the Ministry of Education should be encouraged to implement legislation and policies to make wearing of protective equipment during sports activities obligatory.

Based on the findings of this study further research should be expanded in the following points:-

- 1- Teachers and parent experiences about prevention methods and emergency dental management as they play an important role not only by prompting children's health but also positively impact their quality of life.
- 2- The capability of the dentists to participate in preventive and therapeutic activities as members of multidisciplinary sports medicine teams.

3- How dental education system address the sport dentistry in their curriculum.

Chapter 8

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Chapter 9

9 Appendix

Appendix I

Dental trauma classifications:

1-Classification by Ellis (1970):

Class I - Simple crown fracture with little or no dentin affected

Class II - Extensive crown fracture with considerable loss of dentin, but with the pulp not affected.

Class III - Extensive crown fracture with considerable loss of dentin and pulp exposure.

Class IV - A tooth devitalized by trauma with or without loss of tooth structure.

Class V - Teeth lost as a result of trauma.

Class VI - Root fracture with or without the loss of crown structure.

Class VII - Displacement of the tooth with neither root nor crown fracture

Class VIII - Complete crown fracture and its replacement.

Class IX - Traumatic injuries of primary teeth

2-Classification of Traumatized Anterior Teeth (Ellis and Davey 1970).

Class 1: Simple fracture of the crown – involving little or no dentine.

Class 2: Extensive fracture of the crown – involving considerable dentine, but not the dental pulp.

Class 3: Extensive fracture of the crown – involving considerable dentine and exposing the dental pulp.

Class 4: The traumatised tooth which becomes nonvital – with or without loss of crown structure.

Class 5: Teeth lost as a result of trauma

Class 6: Fracture of the root – with or without loss of crown structure

Class 7: Displacement of a tooth – without fracture of crown or root

Class 8: Fracture of the crown en masse and its replacement

Class 9: Traumatic injuries to deciduous teeth.

3-Classification by McDonald (2004).

Class 1 - Simple fracture of the crown involving little or no dentin.

Class 2 - Extensive fracture of the crown involving considerable dentin but not the dental pulp.

Class 3 - Extensive fracture of the crown with an exposure of the dental pulp.

Class 4 - Loss of the entire crown.

4-Andreasen classification (2007).

Crown infraction: Incomplete fracture of the enamel.

Uncomplicated crown fracture: A fracture confined to the enamel or dentine but not exposing the pulp.

Complicated crown fracture: A fracture involving enamel and dentine, and exposing the pulp.

Root fracture: A fracture involving the dentine, cementum and the pulp.

Uncomplicated crown-root fracture: A fracture involving enamel, dentine, cementum, not exposing the pulp.

Complicated crown-root fracture: A fracture involving enamel, dentine and cementum, and exposing the pulp.

Concussion: Injury without abnormal loosening or displacement but with marked reaction to percussion.

Subluxation(loosening): Injury with abnormal loosening but without displacement of tooth.

Intrusive luxation (central dislocation).

Extrusive luxation (peripheral dislocation, partial avulsion).

Lateral luxation.

Exarticulation (complete luxation).

5-Classification by World Health Organization in its application of International Diseases of Dentistry and Stomatology (1995).

A. Injuries to the hard dental tissues and the pulp.

1) Enamel infraction (N 502.50): An incomplete fracture (crack) of the enamel without loss of tooth substance.

2) Enamel fracture (uncomplicated crown fracture) (N 502.50): A fracture with loss of tooth substance confined to the enamel.

3) Enamel- Dentin Fracture (Uncomplicated Crown fracture) (N 502.51): A fracture with loss of tooth substance confined to enamel and dentin, but not involving the pulp.

4) Complicated crown fracture (N 502.52): A fracture involving enamel and dentin, and exposing the pulp.

5) Uncomplicated Crown- Root Fracture (N 502.54) : A fracture involving enamel, dentin and cementum, but not exposing the pulp.

6) Complicated Crown-Root fracture (N 502.54): A fracture involving enamel, dentin and cementum, and exposing the pulp.

7) Root Fracture (N 502.53): A fracture involving dentin, cementum, and the pulp.

Root fracture

can be further classified according to displacement of the coronal fragment, as Horizontal, Oblique, and Vertical.

B. Injuries to the periodontal tissues.

1) Concussion (N 503.20): An injury to the tooth-supporting structures with abnormal loosening or

displacement of the tooth, but with marked reaction to percussion.

2) Subluxation (Loosening) (N 503.20): An injury to the tooth-supporting structures with abnormal loosening, but without displacement of the tooth.

3) Extrusive Luxation(Peripheral Dislocation, Peripheral Avulsion) (N 503.20): Partial displacement of the tooth out of its socket.

4) Lateral Luxation (N 503.20): Displacement of the tooth in a direction other than axially. This is accompanied by comminution or fracture of the alveolar socket.

5) Intrusive Luxation (Central dislocation) (N 503.21): Displacement of the tooth into the alveolar bone. This injury is accompanied by comminution or fracture of the alveolar socket.

6) Avulsion (Exarticulation) (N 503.22): Complete displacement of the tooth out of its socket.

C. Injuries to the supporting bone.

1) Comminution of the mandibular (N 502.60) or Maxillary (N 502.40) Alveolar Socket: Crushing and compression of the alveolar socket. This condition is found concomitantly with intrusive and lateral luxations.

2) Fracture of the Mandibular (N 502.60) or Maxillary (N 502.40) Alveolar Socket

Wall: A fracture confined to the facial or oral socket wall.

3) Fracture of the Mandibular (N 502.60) or Maxillary (N 502.40) Alveolar

process: A fracture of the alveolar process which may or may not involve the alveolar socket.

4). A fracture involving the base of the mandible or maxilla and often the alveolar process(jaw fracture).The fracture may or may not involve the alveolar socket.

D. Injuries to gingiva or oral mucosa.

1) Laceration of gingival or oral mucosa (S01.50)

A shallow or deep wound in the mucosa resulting from a tear, and usually produced by a Sharp object.

2) Contusion of gingiva or oral mucosa (S00.50)

A bruise usually produced by impact with a blunt object and not accompanied by a break in the mucosa, usually causing sub mucosal hemorrhage.

3) Abrasion of gingival or oral mucosa (S 00.50)

A superficial wound produced by rubbing or scraping of the mucosa leaving a raw, bleeding mucosa.

Appendix II

List of public sport centers from Libyan Ministry of Youth and sport (Libyan Football Association-Benghazi)

**الإتحاد الليبي**
كرة القدم
الإتحاد الفرعي
كرة القدم / بنغازي

الرقم الاشاري / ا ف ب / 21/83
الموافق: 2011/11/19

السادة / كلية الاسنان جامعة العرب الطبية

بعد التحية

نود افادتكم بأسماء الاندية التابعة للاتحاد الفرعي لكرة القدم بنغازي وهي: -

- 1- **اندية الدوري الممتاز** (الأهلي _ النصر _ الهلال _ التحدي)
 - 2- **اندية الدرجة الأولى** (بنغازي الجديدة _ شمال بنغازي _ الوحدة _ النجمة _ الطيران _ المروج _ الانوار _ السد _ السواعد _ النجوم)
 - 3- **اندية الدرجة الثانية** (الحرية _ النهر _ خالد بن الوليد _ السلاوي _ السواحل _ الهدف _ المختار _ السلقيوم _ الرجمة _ المجاهد _ النجم الساحلي _ اطاس _ قاريونس _ الشعلة _ العروبة _ الإصرار)
 - 4- **اندية الدرجة الثالثة** (بودريسة _ الخطاف _ المبنى _ المقرون _ السهول _ بوطني _ الاستقلال _ المدينة _ بونقطة _ اتحاد المرج _ الربيع _ الطليعة _ المجد)
- وبذلك يكون مجموعة الاندية التابعة للاتحاد الفرعي لكرة القدم بنغازي ثلاثة واربعون نادي

الإتحاد الليبي لكرة القدم
بنغازي



عبد المنعم عبد الكريم العمروني

رئيس الاتحاد الفرعي لكرة القدم بنغازي

لحظة



Appendix III Questionnaire

دراسة عن سلوك ووعي المدرسين الرياضيين بإصابات الوجه و الأسنان

اسم الباحث نكتيرة ايمان العربي

- عزيزي المدرب: نرجو منكم تعبئة الاستبيان المرفق والتي يبحث عن سلوك ووعي المدرسين الرياضيين بإصابات الوجه و الأسنان
- سنلاحظون عدم وجود بيانات تحدد هوية المشاركين وذلك حتي تتمكنكم من الإجابة علي الاسئلة بصراحة و سرية.
- المشاركة في هذه الدراسة اختيارية وليست اجبارية

شكرا جزيلاً

القسم الأول: (معلومات عامة عن المدرب)

1- الجنس ذكر - انثى

2- العمر

3- المؤهل العلمي

4- الوظيفة الأساسية

5- هل مارست أي رياضة في الماضي؟ نعم - لا

- إذا كانت الإجابة نعم ، فما هي الرياضة التي مارستها؟

.....

6- هل بإزيتك تمارس هذه الرياضة؟ نعم - لا - أحياناً

7- في أي رياضة أنت تعمل كمدرّب؟

.....

8- منذ متى وانت تعمل مدرباً لهذه الرياضة؟

.....

القسم الثاني: (تعرض المدرب او احد الاعبين على اصابات في الوجه و الأسنان)

9- في رأيك ماهي النسبة المتوقعة لحدوث إصابات في الأسنان أثناء ممارسة الأنشطة الرياضية؟

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

10- هل تعرضت من قبل لإصابة في الوجه أو الأسنان أثناء ممارسة الأنشطة الرياضية؟

نعم - لا

11- إذا كانت الإجابة بنعم ، فما هي نوع الإصابة التي تعرضت لها؟

أ. إصابة في الوجه مثل :

كدمات في الوجه جروح في الوجه كسر عظم الوجه

ب. إصابة الأسنان مثل :

كسر في الاسنان خروج السن من مكانها بالكامل - تحرك السن من مكانها مع بقائها داخل الفك

ج. اصابات اخري اذكرها

12- هل سبق لك أن رأيت إصابة في أسنان أحد اللاعبين أثناء ممارستهم الرياضة؟

نعم - لا

13- إذا كانت الإجابة بنعم، فما هي نوع الإصابة؟

أ. إصابة في الوجه مثل :

كدمات في الوجه جروح في الوجه كسر عظم الوجه

ب. إصابة الأسنان مثل :

كسر في الاسنان خروج السن من مكانها بالكامل تحرك السن من مكانها مع بقائها داخل الفك

ج. اصابات اخري اذكرها

القسم الثالث: (كيفية تعامل المدرس مع إصابات الأسنان الطارئة)

14- ماذا ستفعل إذا حدثت إصابة في أسنان أحد اللاعبين أثناء أنشطة التدريب الخاصة بك؟

تسعف المريض الي اقرب مستشفى تتصل بطبيب الفريق تتصل بالوالدين

15- ماذا ستفعل اذا تعرض احد الرياضيين الي إصابة في الأسنان ادت الي خروج السن الدائمة من مكانها بالكامل ؟

يخلص من السن تنظيف السن تحت الماء تغلف السن بمتديل أو شاش نظيف

تضع السن في الحليب تحتفظ بالسن في محلول ملحي تحتفظ بالسن في مطهر

تقوم بإرجاع السن الي مكانها الصحيح داخل الفك

16- إذا كان هناك جزء فقط مفقود من السن ، فهل تبحث عنه؟

نعم - لا

17- هل تعتقد أن الجزء المكسور من السن يمكن أن يعاد وصله بالسن مرة اخرى؟

نعم - لا

18- هل سمعت عن محلول لحفظ السن في حاله خروجها من مكانها بالكامل؟

نعم - لا

القسم الرابع:- (معرفة المدرب بواقى الأسنان ومدى أهميته)

19- هل تعرف ما هو واقى الاسنان؟ نعم - لا

إذا كانت الإجابة نعم فأجب عن الأسئلة التالية :-

20- هل ارتديت واقى الأسنان كرياضي؟ نعم - لا

21- إذا كانت الإجابة لا فما السبب :-

لأنه يسبب صعوبة في التحدث او التنفس لأنه يثر علي المظهر الجمالي للأسنان أسباب اخري اذكرها

22- هل تتصح لاعبيك باستخدام واقي الأسنان؟ نعم - لا

23- هل تعتقد أن ارتداء واقي الأسنان يمكن أن يكون فعالاً في منع إصابة الأسنان أثناء ممارسة الرياضة؟

نعم - لا

القسم الخامس:1- (توعية وتعليم المدرب بشأن إصابات الامتازان والوجه)

24- هل سبق لك أن تلقيت أي نوع من التوعية حول إصابات الامتازان والوجه المرتبطة بالرياضة أثناء عملك كمدرّب؟ نعم - لا

25- إذا كانت الإجابة نعم . ما هي نوع التوعية؟

دورات تعليمية عبر الإنترنت محاضره تثقيفيه

26- في رأيك ما هي أفضل طريقة للتوعية؟

محاضرة تثقيفيه دورات تعليمية عبر الإنترنت غير مهتم يمثل هذه التوعية

10 Arabic summary

مستوى وعي وسلوك المدربين الرياضيين في مدينة بنغازي حول إصابات الأسنان الطارئة المتعلقة بالرياضة

إعداد

إيمان خالد العربي

المشرف

د. إرحيم العوامي

الملخص

الهدف من الدراسة:- يهدف البحث الى التعرف على السلوك و مستوى الوعي المدربين الرياضيين في مدينة بنغازي حول إصابات الأسنان الطارئة المتعلقة بالرياضة

الطريقة المتبعة في البحث:- تم إجراء دراسة ذات مقطع مستعرض للمدربين الرياضيين في المراكز الرياضية العامة والخاصة في مدينة بنغازي. تم تجميع 151 استبياناً، يحتوي كل استبيان على ستة وعشرون سؤالاً لتحديد مستوى وعي المدربين الرياضيين و سلوكهم بعد إصابات الأسنان وطرق الوقاية منها. تم تحليل البيانات باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (SPSS25).

النتائج:- أظهرت النتائج ان 122 (74%) مدرباً شاهد إصابات في الفم والوجه في لاعبيهم خلال مسيرتهم التدريبية، واحد وسبعون مدرب (47%) فقط ممن تعرضوا لهذه الإصابات شخصياً ، وكانت إصابة الوجه هي الأكثر مشاهدةً وتجربةً. أفاد الجزء الأكبر من المدربين حوالي سبعون مدرب (46.4%) أنهم قاموا بلف الأسنان المنزوعة بمنديل أو شاش ومدرب واحد فقط قام بحفظ السن في اللبن، بينما أربعة اخرون مستعدون لإعادة زرع السن في الفم. اظهرت الدراسة ايضا أن غالبية المدربين 135 (89.4%) يعرفون ما هو وافي

الفم ، لكن واحد وثمانون فقط (53.6%) يوصون به لاعبيهم. وأن اثنان وستون (41.1%) من المدربين تلقوا تعليمًا مسبقًا حول إصابات الأسنان في الرياضة.

الخلاصة: - وفقا للمعطيات فان هناك تدني في مستوى الوعي والسلوك لمدربين الرياضيين في مدينة بنغازي حول إجراءات الطوارئ اثناء إصابات الطارئة للأسنان. فلذلك ينبغي تنفيذ البرامج التعليمية المستمرة في المراكز الرياضية المختلفة لزيادة وعيهم تجاه إصابات الأسنان المختلفة وكيفية الوقاية منها.



مستوى وعي وسلوك المدربين الرياضيين في مدينة بنغازي حول إصابات الأسنان الطارئة المتعلقة بالرياضة

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