Knowledge, Attitudes, and Behavior of Physical Education Teachers in Bengaluru, India, regarding Sports-related Orofacial Injury and its Prevention

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ABSTRACT

Background: Sport is the most important entity of human life for holistic well-being of an individual. At the same time, it exposes them to high risk of orofacial injury. The present study aims to assess the knowledge, attitudes, and behavior of physical education teachers about orofacial sports injuries and preventive measures in sports.

Materials and methods: A 25-item, close- and open-ended questionnaire was distributed to 100 coaches from 62 high schools selected by stratified random sampling technique in Bengaluru city, India. The data were subjected to statistical analysis.

Results: Descriptive statistics was used for the data, while chi-square statistics was employed to test the significance of association between variables. The study population comprised of 75 males and 26 females, with the mean age of 39.51 and 41.12 respectively. About 81% of coaches accepted injuries among students during sports activity; 92% of injuries were in contact sports. About 85% of them considered headgear and 27% mouth guards as effective protective devices; 18% of coaches felt protective devices reduce efficiency and 97% of them were interested in improving their knowledge regarding protective devices.

Conclusion: The present study is an attempt to address the issue of sports-related injury by focusing on coaches as they are the main influences on players and sports administration. There is need to popularize orofacial protective devices in a variety of sports events in our country by interacting with sports coaches, sports administrators, and sportspersons as well as familiarizing the Indian dentist in this relatively newer field.

Keywords: Mouth guard, Orofacial injury, Prevention, Sports, Sports coaches.


INTRODUCTION

Sport is well known as a common cause of dental and oral injuries, with sports-related injuries accounting for 3 to 39% of all trauma cases in the oral region. Many adolescents who participate in high school sports appear to remain at high risk of experiencing an orofacial injury. The increasing popularity of all sporting events results in increased potential for injuries across a wide range of sports. High school students who participate in so-called collision sports like football, hockey, and rugby are required to wear mouth guards. Mouth guards help to reduce the likelihood of oral trauma, concussions, cerebral hemorrhage, and possible death by a number of mechanisms. Despite the growing evidence for the importance of this piece of athletic equipment in injury prevention, compliance to its recommended mandatory use in various contact sports by different athletic communities of various countries is not universal. Attitudes of coaches, officials, parents, and players toward wearing mouth guards influence usage. Coaches are perceived as the individuals with the maximum impact on whether or not players wear mouth guards. Sports-related concussions occur frequently in a multitude of athletic endeavors across all levels of play. Improved dental injury prevention measures to avoid expensive and potentially disfiguring dental injuries in young athletes should be encouraged. The purpose of the present study was to assess the knowledge, attitudes, and behavior of secondary school sports coaches/physical education teachers about orofacial injuries and preventive measures in sports.

MATERIALS AND METHODS

A cross-sectional study was conducted. A 25-item, close- and open-ended self-completion questionnaire was distributed to 100 coaches from 62 high schools selected from different parts of Bengaluru city in India in August 2011, by stratified random sampling technique. The questionnaire sought information on incidence of orofacial injury during games and practice sessions, the sports that cause...
maximum injuries, mechanism and nature of injury, precautions and protective devices for its prevention, reasons for use of mouth protectors (mouth guard), the time of requirement, the types of mouth protector used, the major reasons for choosing a specific mouth protector, and personal feeling as to whether mouth guards prevent oral injury. A total of 100 sports coaches were selected from 62 high schools. The list of schools was obtained from the office of deputy director of public instructions (DDPI) Kalasipalyam, Bengaluru. Schools were stratified as per office of DDPI that had subdivided them as north: 1, 2, 3, 4 and south: 1, 2, 3, 4. Ratio of government and private schools could not be ascertained due to unavailability of sports teachers and number of schools. All physical education teachers who were working in schools and voluntarily wanted to participate in the study were included.

Statistical Analysis

Descriptive statistical analysis was carried out in the present study. Results on continuous measurements are presented as mean ± standard deviation (SD; min–max) and results on categorical measurements are presented as number (%). The statistical software Statistical Package for the Social Sciences (SPSS) 13.0 and Microsoft Word and Excel were used to generate graphs and tables.

RESULTS

The present study was conducted to assess awareness and practices of secondary school sports’ coaches about orofacial injuries and preventive measures in sports. Descriptive statistics was used for the data, while chi-square statistics was employed to test the significance of association between variables. The response rate of the coaches to the survey was 100%. Among all the coaches, 75 (74%) were males and 26 (26%) were females, with the male: female ratio being 2.8:1 (Graph 1). The age range was 21 to 64 years for males with mean age of 39.51 ± 12.16 years, and for females age range was 21 to 59 years with mean age of 41.12 ± 10.45 years (mean ± SD). No significant difference in mean age between males and females in the study sample was found. Years of experience ranged from 1 to 36 years for males and for females it was 1 to 25 years, and there was no significant difference in mean experience (years) between males and females in the study sample.

Regarding incidence of injuries during sports activity, about 81% of coaches accepted injuries among students during sports, whereas only 19% of them denied the incidence of injury (Graph 2). About distribution of different sports causing injuries, 92% of injuries were in sports like kabaddi, kho-kho and karate; 88% of injuries were in sports like cricket, volley ball, and hockey; and 7% due to athletics (Graph 3). As to the knowledge of coaches regarding protective devices, 85% of them considered head guard as the most common protective device followed by 50% of them considering head guard and face mask, whereas only 27% considered mouth guards as effective protective devices (Graph 4). In the opinion of coaches regarding mandatory use of protective devices, 85% of them felt mandatory use of protective devices in games like cricket and 41% considered the same for hockey (Table 1).

About 92% of coaches interacted with medical/dental experts. Majority of them interacted (44%) during their training or course. About 94% of coaches had sports-related injuries and their prevention as part of their syllabus during their course. About 73% accepted parental concern regarding sports-related injuries in contact sports, whereas only 27% of them expressed such concern in noncontact sports. And 72% them revealed that girls are more concerned about such injuries.

About 79% of coaches had witnessed less than five injuries in the last academic year, and the injuries were
related to nonuse of protective devices; 80% of injuries occurred due to sports like kho-kho and kabaddi. Regarding the mechanism and nature of injuries, majority (82%) of injuries occurred because of fall and 79% of them were due to being hit by a hard object. The most common injury was bruise (82%) followed by avulsed/broken tooth (76%) (Table 2).

A total of 97.0% of the coaches believed that mouth guard should be worn at all times – during practice sessions and competitions – while 2% prefer its use only during competitions. Regarding the types of mouth guard used by the athletes as claimed by the coaches, the majority of coaches (90%) claimed that their athletes used the mouth-formed type. And 90% of the coaches claimed that they are aware of three types of mouth guard. A total of 93% of the coaches show that the quality and degree of oral protection was the main factor determining the choice of the type of mouth guard for athletes by the coaches. The cost of the protective appliance was the next for the selection of the appliance. Acceptance of mouth guard by athletes was scored as positive by 92% of the coaches, while only 7% indicated a negative response to mouth guards by their athletes. And 93% of coaches accepted to advocate the use of mouth guard if provided free of cost; 83% coaches believed that mouth guards prevent orofacial injuries, while the remaining felt otherwise. Also, 97% coaches would like more information on different types of mouth guards, while 3% claimed they did not need that; 18% of coaches felt protective devices reduce efficiency, while 82% believed that it enhances efficiency.

**DISCUSSION**

Advocacy for mouth guard use should focus on coaches, coach associations, and rule-making organizations. Coaches participating in this study ranged from 21 to 64 years of age, with mean age of 38 (±10) years, whereas coaches who participated in the study conducted by Onyeaso and Adegbesan ranged from 19 to 51 years of age, with mean age of 38.07 ± 8.97 years. In the present study, the coaches ranged in experience from 1 to 36 years, with mean experience of 14.08 years, whereas the study conducted by Cetinbaş and Sönmez in Turkey reported 9 to 32 years of experience, with mean experience of 14.08 years. According to the present study, about 81% of coaches accepted injuries among students during sports activity, among which 92% of injuries were in sports like kabaddi, kho-kho, and karate; 88% of injuries were in sports like cricket, volleyball, and hockey; and 7% of it was due to athletics. The study conducted by Lieger and Von Arx reveals that 48% of the injuries were due to handball, 45% of injuries due to basketball, 59% due to ice hockey, and soccer contributed 24% of injuries.

In the present study, the coaches considered helmet as the most protective device (85%) followed by face mask (50%) and mouth guard (27%). And in the study reported by Lehl, 80% of coaches considered helmet the most common protective device followed by face mask (23%) and mouth guard (27%). The present study found that 92% of the coaches had interacted with medical/
Table 2: Incidence, mechanism, and effect of injury

<table>
<thead>
<tr>
<th>Questions</th>
<th>Response</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence of injury in the last</td>
<td>None</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>academic year</td>
<td>1–5</td>
<td>80</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>6 or more</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sports event injuries were related to</td>
<td>Kho-kho</td>
<td>81</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Kabaddi</td>
<td>81</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Volleyball</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Mechanism of injury</td>
<td>Falls</td>
<td>83</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>Collisions</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Hit by a ball hockey/hard object</td>
<td>77</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>Fight between players</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Any other</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Effect of injury</td>
<td>Bruise</td>
<td>83</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>Cut lip, cheek, tongue</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Broken tooth, avulsed tooth</td>
<td>77</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>Fracture of facial bones</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Loss of consciousness/concussion</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Knowledge, Attitudes, and Behavior of Physical Education Teachers in Bengaluru, India

dental experts for safety precautions. Lehl reported that 87.08% of the coaches had interacted with medical/dental experts for safety precautions. In the study conducted by McNutt et al, it was reported that 75% of injuries occurred during nonuse of mouth guards, of which 40% occurred during basketball and baseball. The present study found that the most common mechanisms of orofacial injuries are fall (82%) and being hit by a hard object (76%). But a study done in Nigeria by Azodo et al regarding the mechanism of orofacial injury found that being hit by elbow of opponent player contributed to 36.9% of injury and fall and collision with another player contributed 29.2 and 13.6% of injury respectively. This difference in the mechanism of injury can be due to type of games played in India and Nigeria. About 79% of coaches had witnessed less than five injuries in the last academic year, and injuries were related to nonuse of protective devices, which is consistent with the previous study done by Lehl. In the present study, bruise and avulsed or broken tooth was the outcome of injuries, with 82 and 76% respectively. Lieger and Von Arx found 42, 31, and 27% of soft tissue lesion, avulsed tooth and broken tooth respectively. A total of 56.8% of soccer and volleyball coaches reported at least one injury in a season: A cut lip, tongue, or cheek. It should be a cause of great concern, as they may represent a tooth object impact in which significant tooth damage was avoided only fortuitously. Mandatory regulations regarding use of mouth guards reduced football injuries to face and mouth from 50 to 1.4%. As reported by Yamade, contact sports accounted for 77% of oral injuries, while 22% was due to noncontact sports, whereas the present study reported 73% due to contact sports and 27% due to noncontact sports. The present study seems to suggest that many physical education teachers do not appreciate that contact sports deserve this protective device, although 97% of them believed that mouth guard should be worn during practice session and competition and appreciable percentage of them (18%) believed it reduces the efficiency. A total of 90% of them use mouth-formed mouth guard (type ii), not professionally custom-made mouth guard. The necessity for custom-fitted mouth guards for athletes was questioned. Moreover, 97% of them were found to be interested in gaining more information about mouth guards. Almost all the physical education teachers (97%) considered the quality and degree of oral protection as the major factor that would influence their choice of mouth guard for their players prior to cost of appliance. This means that dentists should be properly trained and equally sensitized to provide such professional services to players. From high school sports to professional teams, there is a great need for team dentists. The epidemiology of orofacial injuries therefore undergoes a paradigm shift with changes in equipment and regulations. The present study is an attempt to address issue of sports-related injury by focusing on coaches as they are the main influence on players as well as sports administrators.

CONCLUSION

Sport is well known as a common cause of dental and oral injuries, with sports-related injuries accounting for all trauma cases in the oral region. There is a need to popularize orofacial protective devices in a variety of sports events in our country by interacting with sports coaches, sports administrators, and sportspersons as well as familiarizing the Indian dentist in this relatively newer field. The present study suggests the need for more education of these physical education teachers on the importance of mouth guards for their high school players in preventing facial trauma. The present study is thus an attempt to address the issue of sports-related injury by focusing on coaches as they are the main influences on players and sports administrators. Sport is well known as a common cause of dental and oral injuries among adolescents. There is need to plan a sports preventive strategy at local level by providing feedback to coaches and trainees and by promoting the use of orofacial protective devices.

REFERENCES


