

Knowledge, Attitude and Practice towards Sports Dental Injuries and its Prevention among Mothers of Children in Sullia - A Cross-Sectional Study

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Abstract: ***Aim:** This study evaluates the knowledge, attitudes, and practices of mothers in Sullia regarding the prevention of sports-related dental injuries in children. **Materials and Methods:** A cross-sectional survey was conducted among 348 mothers/caregivers of children aged 4-14 years engaged in sports at a randomly selected school in Sullia, Karnataka. A structured questionnaire with 20 closed-ended questions was distributed through school teachers over ten days. Data were analyzed using SPSS software. **Results:** The study included 350 participants with a mean age of 12.31 years; 62% were 13 years old, and 68% were male. All parents reported their children participated in sports, primarily contact sports (37.7%). Only 1.4% received professional guidance on dental injury prevention, despite 99.1% recognizing the need for education. Awareness of dental injury risks was low; only 23.4% identified high-risk sports. While 80.6% reported injuries, only 42.9% knew about reimplantation possibilities. Awareness of mouthguards was minimal (0.9%), with discomfort and perceived lack of importance cited as barriers. **Conclusion:** The findings highlight a significant need for educational initiatives to enhance maternal knowledge about dental injury prevention in sports. Training programs should include emergency management and promote protective devices like mouthguards, alongside collaboration between dentists and sports academies to reduce preventable dental injuries among child athletes.*

Keywords: sports dental injuries, prevention, maternal knowledge, trauma, children, mouthguards

1. Introduction

Prevention is certainly the hallmark of dentistry, the national youth sports foundation for prevention of athletic injuries has reported that dental-orofacial injuries are the most common type sustained during participation in sports. The severity and frequency of contact sports are among the main causes of these injuries. There is an increased risk of dental injuries in contact sports such as boxing, football, basketball and hockey. Additionally, the biological complications of dental trauma are one of the foremost reasons for paying attention to dental trauma.¹ On the other hand, the cost of treatment can impose a significant economic burden on families and society, and treatment delay can make these costs more.

Hence pediatric dentistry focuses mainly on prevention. The majority of dental injuries are witnessed in children ranging from 8-11 years of age, which accounts for 19.2% to 36% of all injuries. As most traumatic dental injuries in children often occur at school and home, the role of parents and caregivers in managing these events is so crucial.² The outcomes of a dental trauma seriously depend on the appropriate and early management done by non-specialists present at the place of the accident (such as mothers).³ Mothers are the primary caregivers of children and their level of knowledge on prevention of disease can play a major role in the prevention of trauma.⁴

This study evaluates the knowledge, attitudes, and practices of mothers in Sullia regarding the prevention of sports-related dental injuries in children. It highlights critical gaps in awareness that could be addressed through targeted educational programs.

2. Materials and Methods

Among the list of schools in Sullia, Dakshina Kannada district, Karnataka, one school was randomly selected for the study. Necessary permissions were obtained from the principals of the respective schools, as well as from the parents/caregivers of the students. The survey was conducted among 348 mothers/caregivers of children aged 4-14 years, engaged in sports, mothers who can read and answer the questionnaire, cognitively competent mothers and who have been residents of Sullia or nearby area are included in this study.

The purpose of the study and the contents of the questionnaire were explained, and informed consent was obtained from those willing to participate in the survey. Self-administered structured questionnaires were prepared, consisting of 20 closed-ended questions with dichotomous and multiple-level response choices to determine the relevant variables. The questionnaire was initially developed in English and then translated into regional languages. It was pretested and validated among 10 participants to assess feasibility, clarity, comprehensiveness, and acceptability. These participants were not included in the final analysis.

The questionnaires were delivered to the mothers through the school teachers of the respective Schools. The school teachers distributed the questionnaires to every child to take home and convey it to their mothers and the response were collected for 10 days duration of the study. Reminder message to return the filled in questionnaires were sent to mothers after 5 days, by the school teachers. Respondents who signed the informed consent form constituted the study population. Mothers who

did not return the consent form or gave incomplete responses to the questionnaire were excluded from the study.

Statistical analysis

The data were entered into Microsoft Excel 2010 version, and the statistical analysis was computed using SPSS Inc. Released 2011.IBM SPSS Statistics for Windows, version 27 Armonk, NY: IBM Corp. Descriptive statistics were computed to calculate responses for each question. One-way ANOVA was used to compare the means of knowledge, attitude, and practice across different age groups, education levels, and income. Normality of the data was tested using Shapiro– Wilks test.

3. Results

The study included a total of 350 participants, with ages ranging from 9 to 14 years. The mean age of the children was 12.31 years (SD = 1.435). The age distribution revealed that the majority of participants were 13 years old, comprising 62.0% of the sample. Other age groups included 9 years (8.3%), 10 years (8.9%), 11 years (6.6%), 12 years (5.1%), and 14 years (9.1%). The differences in age distribution were statistically significant (p < 0.001). **Table No.1**

	N	Minimum	Maximum	Mean	Std. Deviation
Age	350	9	14	12.31	1.435

Table 2: Gender distribution of the studied population

Age in Years	N	Percent	p-value
9 years	29	8.3	<0.001
10	31	8.9	
11	23	6.6	
12	18	5.1	
13	217	62.0	
14	32	9.1	

The gender distribution of the studied population revealed that 68.0% of the participants were male (n = 238), while 32.0% were female (n = 112). This difference in gender representation was statistically significant (p < 0.001).

Gender Distribution	Frequency	Percent	p-value
Male	238	68.0	<0.001
Female	112	32.0	

p-value-chi square test , <0.05 statistically significant , <0.001 highly significant

Participation in Sports - All parents surveyed indicated their children engage in sports, primarily in contact sports (37.7%), limited contact sports (17.1%), and strenuous activities (18.3%). Most children had played for one year (30.3%), with 20% participating for two to four years.

Lack of Professional Guidance: Only 1.4% of parents had received advice from healthcare professionals regarding dental injury prevention, which is concerning, despite 99.1% believing that education on this topic is essential.

Awareness of Risks: Awareness of dental injury risks was low; only 23.4% recognized that certain sports could lead to such injuries, and 45.1% were aware of specific high-risk sports.

Injury Experience: A significant portion (80.6%) reported their children had sustained injuries, including soft tissue lacerations and fractures, with half indicating tooth loss during play. However, only 42.9% knew that a knocked-out tooth could potentially be reinserted.

Reimplantation Awareness -Most parents (41.7%) were uncertain about the timeframe for reimplantation of teeth,

Mouthguard Awareness only 0.9% were aware that mouthguards can prevent dental injuries. Reasons for lack of mouthguard use included discomfort to child (32.9%) and perceived lack of importance (43.4%).

Communication Needs: Almost all mothers (99.4%) expressed a need for improved communication among parents, coaches, and healthcare professionals regarding dental injury risks, advocating for the inclusion of dental injury prevention in school curricula.

These findings underscore a significant gap in awareness and education about dental injury prevention among families involved in sports activities, highlighting the urgent need for enhanced educational initiatives.

TABLE-3

Questions		N	Percent	p-value
1) Is your child involved in any sports?	Yes	350	100.0	<0.001
	No	0	0.0	
2) In which type of sports does your child participate?	Contact	132	37.7	<0.001
	Limited contact	60	17.1	
	Strenuous contact	64	18.3	
	Moderate strenuous	62	17.7	
	Others	32	9.1	
3) How many years has he/she been playing?	1	106	30.3	<0.001
	2	70	20.0	
	3	70	20.0	
	4	70	20.0	
	5	34	9.7	
	Yes	5	1.4	<0.001

4) Have you ever received information /guidance from health care professional regarding dental injury prevention and management for children involving in sports?	No	345	98.6	
5) Do you believe that parents should receive education on how to prevent and manage dental injuries in children?	Yes	347	99.1	<0.001
	No	3	.9	
6) Are you aware of sports, that can cause injury to teeth and surrounding structures?	Yes	82	23.4	<0.001
	No	268	76.6	
7) Are you aware of any specific sports that pose a higher risk of dental injury in children?	Yes	158	45.1	0.069
	No	192	54.9	
8) Does your child have proclined teeth and exhibit incomplete closure of lips?	Yes	102	29.1	<0.001
	No	248	70.9	
9) Did your child undergo any injury like soft tissue laceration or hard tissue injuries such as teeth fracture, bone fracture or black discolouration of teeth?	Yes	282	80.6	<0.001
	No	68	19.4	
10) Did your child's teeth come out while playing?	Yes	178	50.9	0.748
	No	172	49.1	
11) Did you know that it is possible to place teeth back into the mouth?	Yes	150	42.9	0.008
	No	200	57.1	
12) In your opinion within which period of time tooth should be re-implanted ?	30min	41	11.7	<0.001
	1hr	41	11.7	
	24hr	122	34.9	
	Don't know	146	41.7	
13) How would you store/carry an out of socket tooth to your dentist?	1-mouth	47	13.4	<0.001
	2-water	53	15.1	
	3-hbbs	117	33.4	
	4-others	133	38.0	
14) Have you received any information/guidance regarding the storage of avulsed tooth ?	Yes	4	1.1	<0.001
	No	346	98.9	
15) Do you believe that dental injuries in children can have long term consequences for their oral health?	Yes	282	80.6	<0.001
	No	68	19.4	
16) Are you aware of the fact that there are precautions to be taken for prevention of dental injuries?	Yes	178	50.9	0.748
	No	172	49.1	
17) Are you aware of the fact that mouthguards can prevent dental injuries?	Yes	3	.9	<0.001
	No	347	99.1	
18) If no why is it so?	My coach does not tell me to do so	40	11.4	<0.001
	It is expensive	43	12.3	
	It is uncomfortable	115	32.9	
	It is not important for me	152	43.4	
19) Do you think there is a need for better communication between parents, coaches and health care professionals regarding risk of dental injuries?	Yes	348	99.4	<0.001
	No	2	.6	
20) Do you think dental injury prevention should be included in the school curriculum for children engaged in sports?	Yes	348	99.4	<0.001
	No	2	.6	

P-value-chi square test, <0.05 statistically significant, <0.001 highly significant

4. Discussion

Prevention is better than cure and awareness is the first step of prevention. Trauma to anterior teeth are the main reason for loss of vitality or loss of anterior teeth in children engaged in contact sports.⁵ Additionally, predisposing factors like trauma, prone profile and incompetent lips. Helmets and mouth protectors have shown to reduce the incidence of trauma to the teeth.⁶ However knowledge, skills, attitude among mothers play a major role in overall safety of child.

Mothers are the primary caregivers of children and their level of knowledge on prevention of disease can play a major role in prevention of trauma. However, lack of awareness program could be the reason for untouched wisdom.⁷

According to the present study, the study assessed parents' awareness and attitudes regarding dental injury prevention in

children involved in sports.⁸ Notably, all surveyed parents reported that their children participate in sports, with the most common types being contact sports the majority of children had played for one year. Alarmingly, only 1.4% of parents received guidance from healthcare professionals on dental injury prevention, yet an overwhelming 99.1% believed that parents should be educated on this topic.

Awareness of the risks associated with dental injuries was low; only 23.4% recognized that certain sports could lead to such injuries, and 45.1% were aware of specific high-risk sports. Furthermore, 80.6% of parents reported that their children had experienced some form of injury, including soft tissue lacerations or fractures. Half of the parents indicated that their child had lost teeth during play, but only 42.9% knew it was possible to reinsert a knocked-out tooth. Most parents were unsure about the appropriate timeframe for re-implantation of tooth. When it came to storing avulsed teeth, many parents suggested various methods, with only 1.1%

having received guidance on this matter. A significant majority (80.6%) believed that dental injuries could have long-term consequences for oral health; however, awareness of preventive measures was limited, with only half recognizing the existence of precautions against dental injuries and a mere 0.9% aware that mouthguards can prevent such injuries, this finding is consistent with the research by Farzad et al., .

Reasons for lack of mouthguard use included lack of communication from coaches regarding the mouthguard (11.4%), cost concerns of mouthguards (12.3%), mouthguard discomfort to the child (32.9%), and a perceived lack of importance to wear mouthguard (43.4%). Guinot's et al conducted a study which assessed mouthguard awareness and use among 207 athletes (ages 6-18) in high-risk sports in Spain. And concluded that the mandatory mouthguard use in high-risk sports could reduce injuries Almost all parents (99.4%) expressed the need for better communication among parents, coaches, and healthcare professionals regarding dental injury risks and strongly supported the inclusion of dental injury prevention in school curricula for children engaged in sports.⁹ - which echoes the concern raised by Akanksha et al., . These findings highlight a critical need for enhanced awareness and education surrounding dental injury prevention among families involved in sports activities. Zahra et al in 2022 assessed 277 mothers' knowledge and management of dental injuries. The average knowledge score was 3.43/10. Higher scores were linked to working mothers, those with higher education, and prior dental injury experience.⁸ The study suggests the need for targeted educational programs to improve mothers response to dental trauma.⁹

Various informative tools such as learning programs, placards, or brochures are available, which can be utilized for the edification of society.¹⁰ Secondly, at every sports institution, a dental surgeon should be authorized who will not only provide prophylactic care but will also take therapeutic care into consideration¹¹, which was also emphasized by Tokas et al., . Furthermore, during all sporting activities, mouth guards should be made obligatory. These footsteps will certainly help in transforming the approach of the parents, sports coaches, and children in the direction of proper usage of protective aids, which will further help in reducing the rate of orofacial injuries which occur during sports activities.

5. Conclusion

The findings of this study emphasize a need for dental emergency management to be included in training programs for mothers. There is a need to plan a sports preventive strategy at the local level by providing feedback to mothers and children and by promoting the use of orofacial protective devices.¹² Dentists should be appointed by higher authorities at various sports academies/ schools for providing adequate information and training to coaches and mothers about protective aids and emergency management of orofacial trauma and also counsel patients, especially children, adolescents, and young adults, regarding participation in sports so that adequate oral protection can be recommended.¹³

Every sports academy should have a mandatory tie-up with a nearby dental office/hospital for emergency situations.

The findings emphasize that many dental injuries among child athletes are preventable with proper education on protective measures. Enhancing parental knowledge can significantly reduce the incidence of these injuries.

Clinical Significance

This study highlighted knowledge, attitude and practice towards sports dental injuries and its prevention among mothers of children. The need for educating mothers about emergency management of orofacial injuries, and postponement in immediate treatment or inappropriate treatment due to lack of knowledge might lead to a futile outcome of the treated injured teeth¹⁴.

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