



RESEARCH ARTICLE

Evaluation Of Awareness, Attitude And Experience Of Using Mouthguard Amongst Sportspersons During Contact Sports By Self Developed Tool: A Questionnaire Survey

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Abstract

Aim: To develop and validate a tool for evaluate awareness, attitude and experience of using different varieties of mouthguards amongst sportspersons during contact sports. **Method:** Questionnaires with 13 questions were tackling by orthodontics for content validity. The final developed questionnaire was run using Google form, which was completed by 161 participants. Test-retest reliability and Cronbach's alpha were applied on formulated questionnaire. **Results:** Content Validity Index revealed major rating of 3 or 4 score. The result showed the Cronbach's alpha co-efficient for 13 items was 0.839, suggesting relatively high internal consistency and the questions are validated. From the received data of this study found around 55% participants were aware about mouthguard among them only 40% wear it during sports related activity. Most common reason given by players was it protects my teeth and gums from injury (57.1%) for wearing mouthguards. On visual analogue scale around 61.1% sports person gave comfort score above 8 for mouthguard. **Conclusion:** The developed questionnaire can be effectively used for further studies. It revealed a lack of information regarding protective role of mouthguard. The overall experience of athletes regarding the use of mouthguards was good.

Keywords: Awareness, mouth guard, sportsperson, survey

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1 | INTRODUCTION

Maxillary incisors are most often injured during sports activities and account for 80% of all dental injuries. ⁽¹⁾⁽²⁾

Studies suggest that incidence of orofacial trauma can be reduced by use of properly fitted mouthguard. ⁽³⁾⁽⁴⁾⁽⁵⁾⁽⁶⁾⁽⁷⁾⁽⁸⁾ Many review articles described the use of mouthguard and difficulties during use. ⁽⁹⁾⁽¹⁰⁾⁽¹¹⁾⁽¹²⁾⁽¹³⁾ A thorough search of

the literature yield very few studies^{(14) (15) (16)} regarding awareness, attitude and experience of using mouthguard. There is a need to develop a tool for evaluating awareness, attitude and experience of using mouthguard amongst sportspersons during contact sports.

Aim: The aim of this study is to evaluate awareness, attitude and experience of using different varieties of mouthguards amongst sportspersons during contact sports by self developed questionnaire.

Objectives:

1. To develop a questionnaire to evaluate awareness, attitude and experience about use of mouthguard amongst sportspersons during contact sports.
2. To assess the content validity, reliability and internal consistency and construct validity of developed questionnaire.
3. To evaluate awareness, attitude and experience about use of mouthguard amongst sportspersons during contact sports by self developed questionnaire.

2 | MATERIAL AND METHOD

Study Design: Original article-Questionnaire survey

Ethical approval: The ethical approval to conduct study was obtained from Sumandeep Vidyapeeth Institutional Ethical committee (SVIEC).

Source of Data: Athletically active sportspersons related to contact sports (football, Basket ball, etc).

SAMPLE DESCRIPTION:

1. Content validity

Supplementary information The online version of this article (<https://doi.org/xx.xxx/xxx.xx>) contains supplementary material, which is available to authorized users.

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- Reliability and Construct Validity:

Sample size is calculated based on the study done by R.Biagi et al²⁵.

A sample size of 120 achieves 80% power to detect an effect size (W) of 0.25 using 1 degree of freedom Chi-Square Test with a significance level (alpha) of 0.05(5%)

Sample size $N = \text{CHISQAURE} / W^2$ Where $W = 0.25$
 $\text{CHISQAURE} = 7.50$ $DF = 1$ so estimated sample size is 120 required for this study.

SAMPLE SELECTION:

- Inclusion criteria:

1. Seven specialized dentist.
2. Participants of above 18 years of age group.
3. Healthy and athletically active participant who are playing the contact sport for more than 1 year.
4. Participant who can

- exclusion criteria:

1. Participants with any developmental anomalies or syndromic condition.

METHODOLOGY:

A questionnaire was structured into three parts (questions regarding awareness of mouthguard, questions about attitude and questions concerning experience of using mouthguard). Survey was formulated for evaluating awareness, attitude and experience of using mouthguard amongst sportspersons during contact sports based on the qualitative data.

Content Validity: The Formulated questionnaire were given to the seven experts specialized in orthodontics for the content validity.. Each reviewer was independently rate the relevance of each question using a 4-point Likert scale (1=not relevant, 2=somewhat relevant, 3=relevant, 4=very relevant). The Content Validity Index (CVI) developed by Mary R Lynn (1986)²⁹ were used. Three or four

rating indicates the content is valid and consistent. Further, suggestion for improvement was accepted with final questionnaire modified based on content validity.

1. Reliability and Internal consistency:

• Construct validity

After validation of questionnaire, it was distribute using Google form among athletically active participants belonging to the age group above 18 years practicing in contact sports (Boxing, Football, etc) in and around India. Survey questionnaire was given below which aimed at identifying the attitude, awareness and experience of using mouthguard during contact sports.

Evaluation of awareness, attitude and experience of using mouthguard amongst sportspersons during contact sports by self developed tool: A Questionnaire survey”

Date

Name:

Age /Sex:

Mobile No.:

Email id:

Postal Address:

Name of the contact sport/s you play:

Please answer the question if you are eligible to participate.

1.Are you aware regarding use of mouthguard in contact sports?

(a) Yes

(b) No

2.Are you wearing mouthguard during sports activity?

(a) Yes

(b) No exit survey

3.Click on the photo that looks most like the type of mouthguard that you wear while playing sports?

 <p>(a) Boil and bite <input type="checkbox"/></p>	 <p>(b) Stock type <input type="checkbox"/></p>
 <p>(c) Custom made <input type="checkbox"/></p>	<p>(d) My mouthguard type is not shown <input type="checkbox"/></p>

4.Who recommended you to wear a sports mouthguard?

(a)Parents/Family

(b) Coach

(c)Dentist

(d)Specialist

(e) Friend /Team

(f) Others (Specify)

5. Which teeth are covered with your mouthguard?

(a) My upper teeth only

(b) My lower teeth only

(c) Both my upper and lower teeth

6. How frequently do you wear mouthguard during sports?

(a) Full time

(b) Part time

(c)Never

7. Why are you wearing mouthguard during contact sports?

(a)My sport requires mouthguard to be worn

(b)All of my team mates wear it

(c) It protects my teeth and gums from injury

(d) My dentist / specialist prescribed it

(e) Others (Specify)

8. Are you comfortable with your mouthguard?

(a) Yes

(b) No

9. If not comfortable, what are the reasons?

(a) Difficulty in breathing

(b) Difficulty in communication with others

(c) Excessive salivation

(d) Nauseating sensation

(e) Others (Specify)

10. How do you sanitize/ clean your mouthguard?

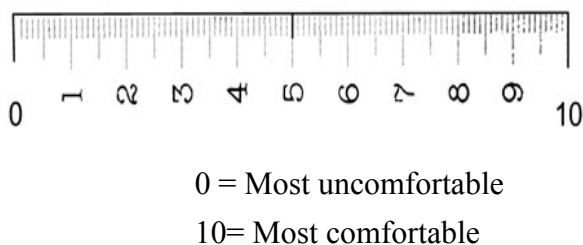
(a)Water

b) Toothbrush and toothpaste

(c)Antiseptic spray / Solution

(d) I don't sanitize

11. Have you experienced any kind of breakage of your mouthguard?
 (a) Yes
 (b) No
12. Do you share your mouthguard with others?
 (a) Yes
 (b) No
13. How is your overall experience with mouthguard? As per VAS- Score:



3 | RESULTS

Result of Content Validity as per 7 experts:

Table 1 and Figure 1 indicate that all the 13 questions have majority of 3 and 4 Content Validity Index Score. A rating of three or four indicates the content is valid and consistent.

Reliability analysis

Table 2 shows Cronbach's alpha test for reliability analysis. The result showed the Cronbach's alpha co-efficient for 13 items is 0.839, suggesting relatively high internal consistency and the questions are validated. 161 youngsters returned questionnaire between ages ranged 18 years to 40 years. The sports involved were football (37.5%), basketball (17.4%), volleyball (37.8%), handball (2.5%) and kabaddi (4.8%).

In this research around 54.7% of the samples were aware about the mouthguard Figure 2. Among them only 40% of sports person wear mouthguard during sports related activity Figure 3. Overall custom made mouthguard were most commonly wear (41.6%) followed by stock type (32.5%) and boil and bite (15.6%). Nearly 10.4% couldn't identify their mouthguard. Figure 4. Most of players reported their reason for wearing a mouthguard was the recommendation of their coach (55.8%); only 29.9% players wearing mouthguard by dentist/specialist's prescription Figure 5.

This study found that 48.1% players wear mouthguard covering upper teeth, 41.6% players wear on both upper and lower teeth followed by 10.4% covering only lower teeth Figure 6. Nearly 51.9% players wear mouthguard for part time where as 32.5% players wear full time during sports related activity Figure 7. The reasons given by players for wearing mouthguards were that It protects my teeth and gums from injury (57.1%), my sport requires mouth guards to be worn (16.9%) and my dentist/specialist prescribed it (15.6%) Figure 8. Among them 79.2% players were comfortable with their mouthguard only 20.8% had some problems for using it Figure 9. In consideration to the reasons why the participants did not use a mouthguard during sports were such had difficulties in communication with others (52%), excessive salivation (20%), difficulty in breathing (14%) and nauseating sensation (10%) Figure 10. Maximum players sanitized their mouthguard with toothbrush and toothpaste (39%), some mention about antiseptic spray/solution (36.4%) and some clean with water (20.8%) Figure 11. 70.1% players had never experienced any kind of breakage with mouthguard Figure 12. Most of the players (87%) did not share their mouthguard with others Figure 13. On visual analogue scale around 61.1% players gave comfort score above 8 for mouthguard Figure 14.

4 | DISCUSSION

In the earlier studies, Awareness of sports as risk factor of dental injuries was evaluated by sports person (14, 15) or conducted a study to assess the orofacial trauma history in basketball players (16) or just assessed the attitude and awareness related to orofacial injuries and effectiveness of mouthguard in athletically active children only. (17) However the objectives of awareness regarding mouthguard use includes not only its protective role but also indicate somewhat comfort and experience of using mouthguard. Hence, I developed 13 questions which include all the major aspect of awareness, attitude and experience of using mouthguard during sports related activity by sports person.

TABLE 1: Distribution of content validity index score

	Score	Q-1	Q-2	Q-3	Q-4	Q-5	Q-6	Q-7	Q-8	Q-9	Q-10	Q-11	Q-12	Q-13
No	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	1	0	0	0	0	0	0	0
	3	2	1	1	4	3	1	1	2	1	3	2	1	2
	4	5	6	6	3	4	5	6	5	6	4	5	6	5
%	1	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
	2	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	14.2 9%	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %
	3	28.57 %	14.2 9%	14.2 9%	57.1 4%	42.8 6%	14.2 9%	14.2 9%	28.5 7%	14.2 9%	42.8 6%	28.5 7%	14.2 9%	28.5 7%
	4	71.43 %	85.7 1%	85.7 1%	42.8 6%	57.1 4%	71.4 3%	85.7 1%	71.4 3%	85.7 1%	57.1 4%	71.4 3%	85.7 1%	71.4 3%

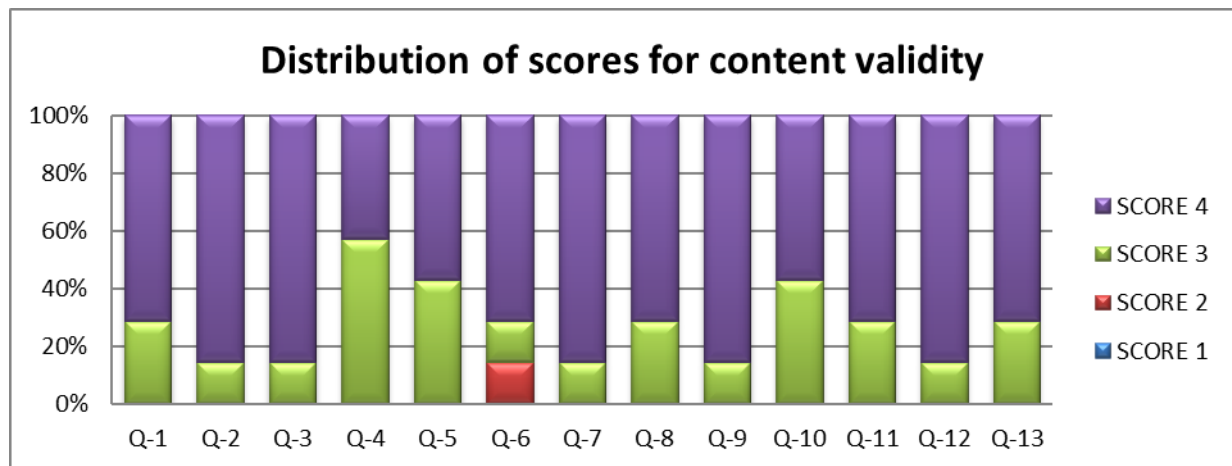


FIGURE 1: Frequency of Scores for content validity

Are you aware regarding use of mouthguard in contact sports?

161 responses

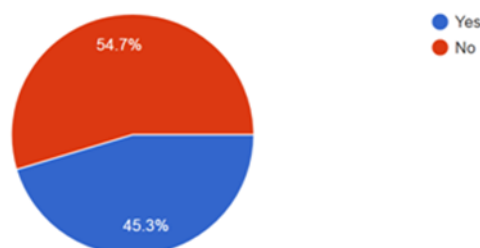


FIGURE 2:

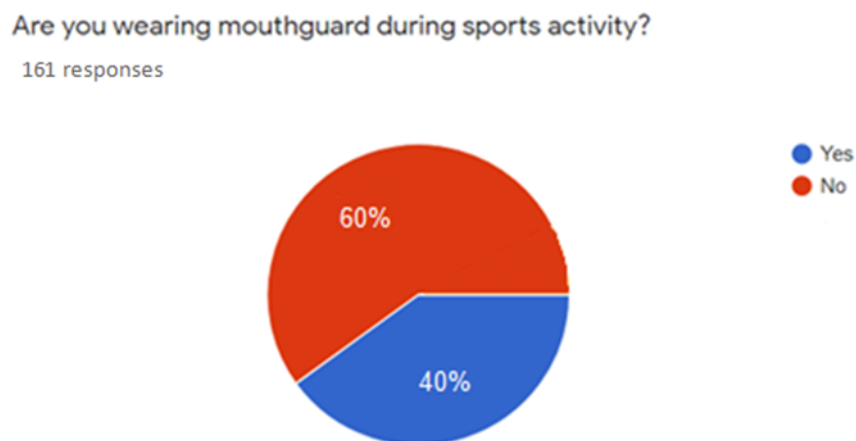


FIGURE 3:

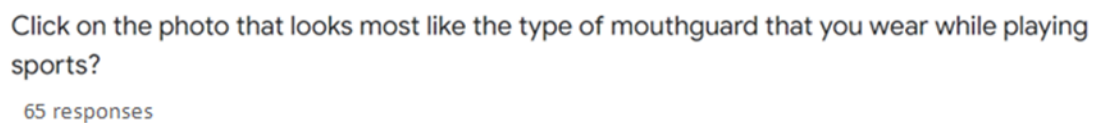


FIGURE 4:

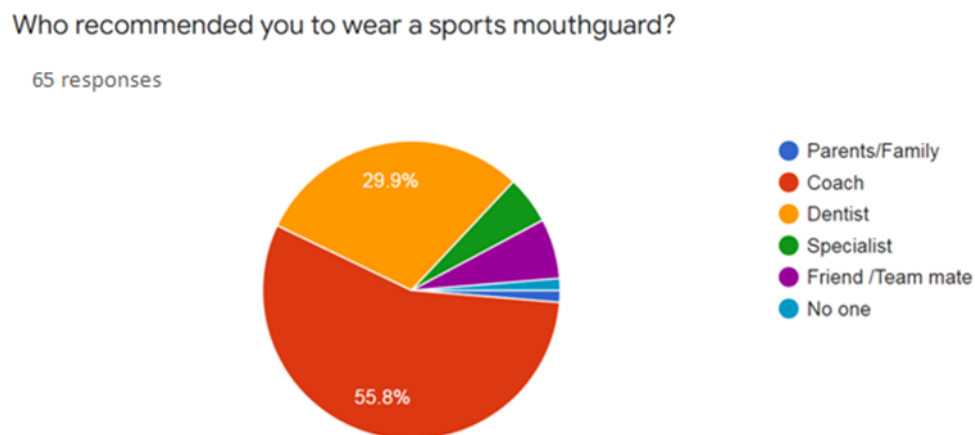


FIGURE 5:

Which teeth are covered with your mouthguard?

65 responses

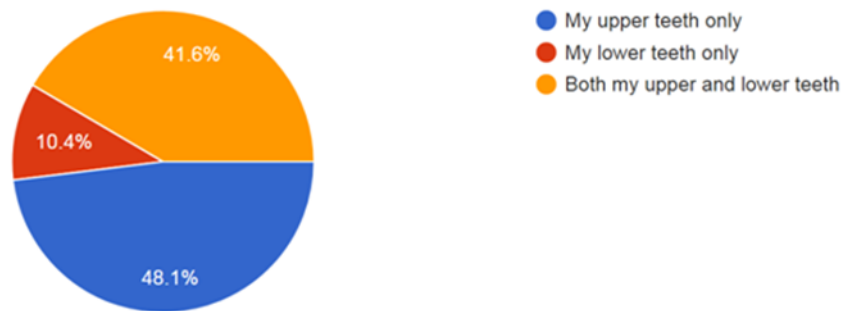


FIGURE 6:

How frequently do you wear mouthguard during sports?

65 responses

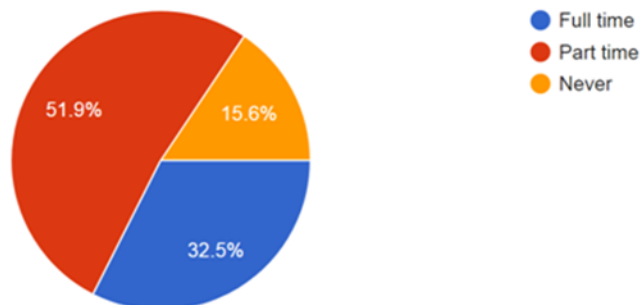


FIGURE 7:

Why are you wearing mouthguard during contact sports?

65 responses

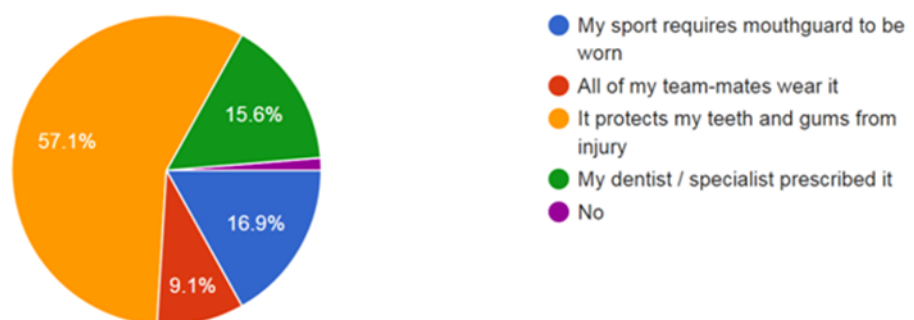


FIGURE 8:

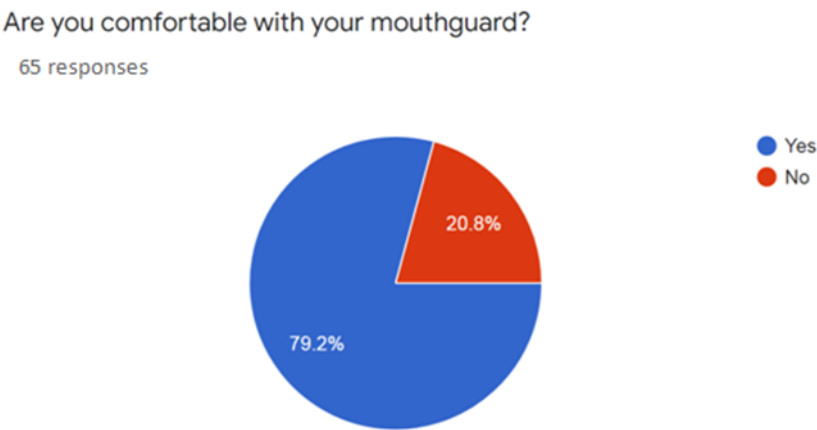


FIGURE 9:

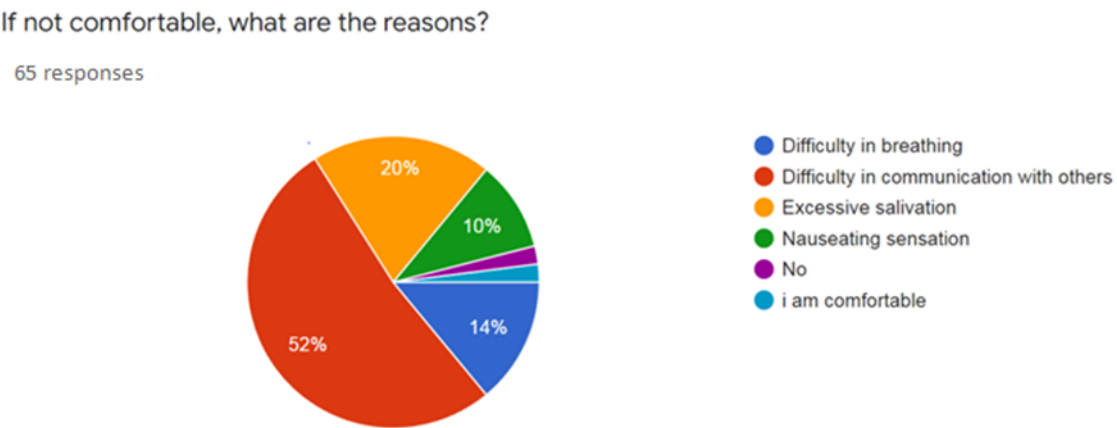


FIGURE 10:

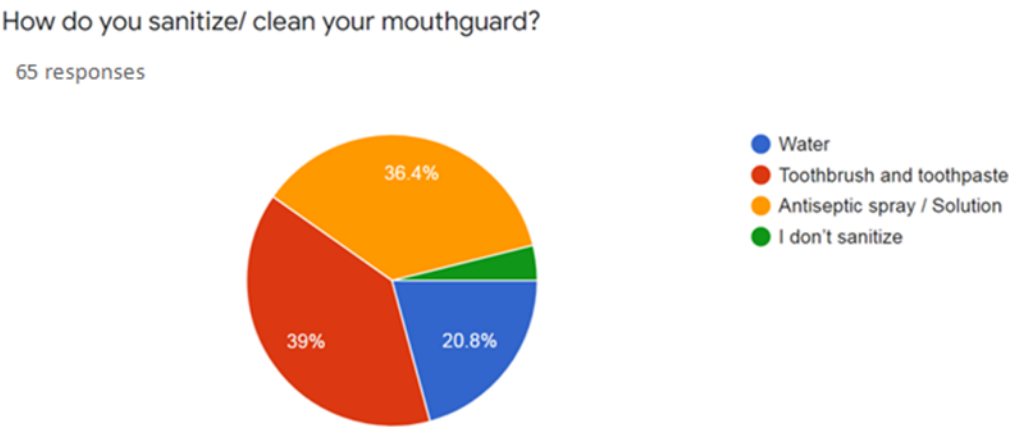


FIGURE 11:

Have you experienced any kind of breakage of your mouthguard?
65 responses

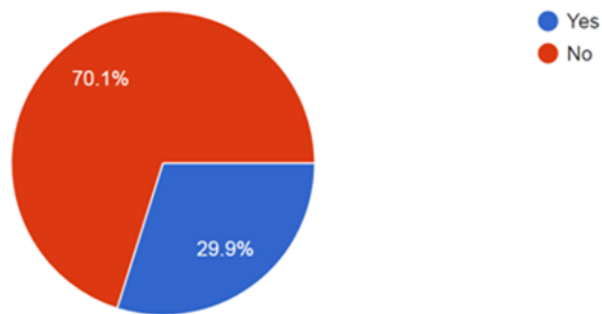


FIGURE 12:

Do you share your mouthguard with others?
65 responses

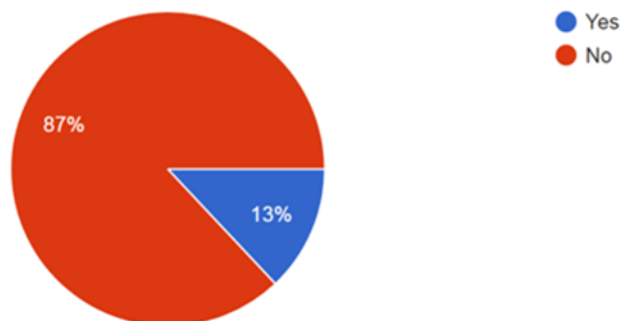


FIGURE 13:

How is your overall experience with mouthguard?
65 responses

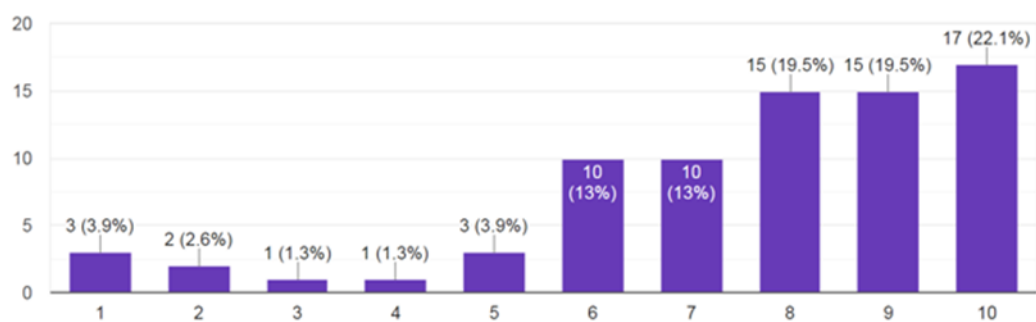


FIGURE 14:

EVALUATION OF AWARENESS, ATTITUDE AND EXPERIENCE OF USING MOUTHGUARD AMONGST SPORTSPERSONS DURING CONTACT SPORTS BY SELF DEVELOPED TOOL: A QUESTIONNAIRE SURVEY

Table 2: Cronbach's alpha test

Reliability Statistics					
Cronbach's Alpha			N of Items		
.839			13		
Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q-1	68.31	11.059	-.007	.823	-.138 ^a
Q-2	68.63	14.142	-.455	.916	.103
Q-3	68.53	10.738	.118	.661	-.208 ^a
Q-4	68.40	11.251	.017	.870	-.149 ^a
Q-5	68.38	12.182	-.159	.751	-.045 ^a
Q-6	68.16	10.882	.075	.914	-.186 ^a
Q-7	68.18	11.025	.041	.924	-.166 ^a
Q-8	68.38	8.705	.481	.970	-.487 ^a
Q-9	68.27	10.516	.106	.955	-.214 ^a
Q-10	68.37	11.731	-.086	.826	-.088 ^a
Q-11	68.30	8.939	.249	.955	-.381 ^a
Q-12	68.31	13.074	-.290	.899	.045
Q-13	68.09	12.552	-.215	.844	-.040 ^a

The content validity was assessed initially via judgement of an expert panel. The Cronbach alpha is a measure of internal consistency: i.e., how closely related a set of items are as a group. The Cronbach alpha value found in this study was 0.83, which means the questionnaire showed very high reliability. We also monitored internal consistency using the results from duplicate respondents (Test–retest reliability).

Based on interview data from the Bastian et al,⁽¹⁷⁾ he was found that the need for mouthguard implementation is of critical importance. Dentists play a major role in promoting mouthguards for persons involved in contact sports regarding sports related orofacial injuries prevention and management. Spinaz et al⁽¹⁸⁾ concluded that no traumatic event was registered among those adolescents who had used the mouth guard for the whole period of the study.

It is important that coach and parents should encourage the regular usage of oral protection devices for prevention among teenagers practicing sports.

5 | CONCLUSIONS

- The developed thematic questionnaire has been validated and effectively used for further studies as a tool to evaluate awareness, attitude and experience of using mouthguard among sports person.
- The present study revealed a lack of knowledge regarding protective role of mouthguard, so more awareness program for coaches, teachers, athletes and parents is essential to promote oral health in sports practice.
- Out of the total number of athletes using mouthguards during sports, problems like difficulty to communicate and excessive salivation were the reasons for the part-time usage of mouthguards.
- The overall experience of athletes regarding the use of mouthguards was good because custom made mouthguards by dentist/specialist will snugly adapt in the mouths of the athletes, which will cause minimal discomfort while playing.

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How to cite this article: Romil Shah, Manisha Bhanushali and Santoshkumar Goje.
Evaluation Of Awareness, Attitude And Experience Of Using Mouthguard Amongst Sportspersons During Contact Sports By Self Developed Tool: A Questionnaire Survey.
Journal of Medical Case Reports and Reviews. 2021;1025–1036.
<https://doi.org/10.52845/JMCRR/2021/4-12-1>