



To Evaluate Knowledge and Awareness, Regarding the Impact of Malocclusion on Aesthetic and Functional Aspects in Children with Mixed Dentition

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KEYWORDS

Malocclusions,
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ABSTRACT:

Introduction: Malocclusions can have a significant negative impact on the functional, social and psychological well-being of young children and their families. Malocclusions may cause pain or discomfort during function or at rest for an individual, most of the times which goes unnoticed by the parents and teachers. Hence this study was done to evaluate knowledge and awareness towards oral health impacts of malocclusion on quality of life among children with mixed dentition using self-report questionnaires.

Aim: To evaluate knowledge and awareness, regarding the impact of malocclusion on aesthetic and functional aspects in children with mixed dentition.

Methodology: A total of 740 children of various schools in South Bangalore, Karnataka aged 8 to 12 years participated in this questionnaire survey. Children answered the close ended questionnaire.

Results: More than 80% of the participants had low awareness of the impact of malocclusion on the oral health and did not perceive aesthetic and functional limitation, however majority of female participants showed significant awareness regarding impact of malocclusion on aesthetic and function.

Conclusion: The present study shows that awareness about the impacts of malocclusion is very limited in children with mixed dentition. As malocclusions have known to cause physical, psychological, and social consequences that affect quality of life demands for early intervention which intern helps in improving the overall quality of life amongst children.

Introduction:

Oral cavity is the mirror of health. The oral cavity of the human body is a clear reflection of the comprehensive condition of heterogeneous tissues in human anatomy¹. Even though Facial aesthetics has always been a concern for children and parents, they are not aware of the fact that dentoskeletal malformations in children cause not only aesthetic problems but also poses psychosocial and functional consequences, it affects both hard and soft tissues, usually associated with impaired masticatory function, speech, dental and periodontal diseases resulting in deterioration of oral health. The period of

mixed dentition is when both the primary and permanent teeth are present in the dental arches^{2,3}. At this stage physiological occlusal relations undergo wide range of variations. This variability begins with the eruption of the permanent teeth and their alignment^{4,5}. Previous studies, regardless of the methodological criteria, have revealed a high prevalence of malocclusion in mixed dentition, ranging from 32.2% to 82.5%⁵.

Over the past decades, oral health-related quality of life assessment tools has been designed and tested on various populations, mainly in adults and elderly but rarely in children⁶. Very few studies have been documented in the



literature discussing the malocclusion its impact on oral health^{7,8}. Hence the aim of the study is to evaluate the knowledge and awareness, regarding the impact of malocclusion on aesthetic and functional aspects in children with mixed dentition using self-report questionnaires.

Materials and Methods

A total of 740 children aged between 8 to 12 years were selected for the study from private schools in south Bangalore. Out of which 383 boys and 357 girls participated in this questionnaire survey. The study was approved by the ethical committee of RajaRajeswari Dental College and Hospital and consent for participation of school children who fulfilled the inclusion criteria were obtained from the heads of the schools. All the children who were present on the day of the data collection were considered in the study. All the participants were requested to complete a close-ended questionnaire, which consists of total 16 questions among which 11 questions pertaining to awareness and 5 questions pertaining to knowledge.

The bilingual (local language and English) questionnaire was made and steps were taken to ensure the reliability of the language-translation. All the participants were asked to complete the questionnaires under our supervision. Interpersonal communication was not allowed and the children were informed of the importance of answering the question honestly. The duly filled questionnaire was collected from the participant on the same day after 15–20 minutes. Any query in the

structured questionnaire was clarified by the investigator; the data collected were entered in the SPSS for Windows, Version 22.0, and were further analyzed and subjected to descriptive and inferential statistical analysis.

The level of significance was set at $P < 0.05$

Results

The result of the study shows that more than 80% of the participants did not perceive aesthetic and functional limitation and had low awareness of the impact of malocclusion on the oral health. However, females showed significantly higher awareness of impact of malocclusion on aesthetic and functional aspects. Table 2 depicts 13% of study participants faced problems while having food, in which difficulty in mastication is 43.2%, difficulty in swallowing is 7.4%, pain while chewing is 49.5%, 7.3% of participants had speech difficulties, like difficulty to pronounce (32.8%) difficulty in speaking fluently (67.2%). Around 70% students who has participated are not aware that malocclusion can lead to tooth decay and gum problems. However 78% of the children perceived proclined teeth as the major malocclusion.(Table2). Among the participants with self-perseverance females showed significantly increased awareness of impact of malocclusion on the aesthetic component(Table3). In our questionnaire survey we found that knowledge and awareness regarding the impact of malocclusion was very limited among the children with mixed dentition.

Table1: Age & Gender distribution among study subjects

Variable	Category	n	%
Age	8-9 yrs.	608	82.20%
	10-12 yrs.	132	17.80%
		Mean	SD
	Mean	8.70	1.14
	Range	08 – 12	
Gender	Males	383	51.8%
	Females	357	48.2%



Table2: Comparison of distribution of subjects' responses to the study questionnaire using Chi Square Goodness of Fit Test

Questions	Responses	n	%	χ^2 value	p-value
Are you facing any problems while having food?	Yes	95	13.0%	399.452	<0.001*
	No	635	87.0%		
If Yes, what is the problem?	Difficulty in chewing on both sides	41	43.2%	29.389	<0.001*
	Difficulty in swallowing	7	7.4%		
	Pain in jaw while chewing	47	49.5%		
Is there any speech difficulties?	Yes	54	7.3%	537.805	<0.001*
	No	684	92.7%		
If Yes, What difficulty?	Difficulty to tell any words	19	32.8%	6.897	0.009*
	Any Speech Sound Disorders/Articulation Disorders	0	0.0%		
	Any difficulty in speaking fluently	39	67.2%		
Do you think irregularly tooth cause decay?	Yes	155	21.0%	249.041	<0.001*
	No	584	79.0%		
Do you think irregularly tooth cause gum problems?	Yes	96	13.0%	405.816	<0.001*
	No	644	87.0%		
Do you think irregularly tooth can make brushing more difficulty?	Yes	199	26.9%	158.059	<0.001*
	No	541	73.1%		
Do you face any difficulty while breathing?	Yes	62	8.4%	512.778	<0.001*
	No	678	91.6%		
Do you avoid smiling in public places?	Yes	103	13.9%	385.346	<0.001*
	No	637	86.1%		
Do you avoid social gathering due to your appearance?	Yes	119	16.1%	340.546	<0.001*
	No	621	83.9%		
Do you hide your teeth while speaking?	Yes	30	4.1%	624.865	<0.001*
	No	710	95.9%		
Are you aware of importance of teeth and jaw?	Yes	658	88.9%	448.346	<0.001*
	No	82	11.1%		



Table2: Comparison of distribution of subjects' responses to the study questionnaire using Chi Square Goodness of Fit Test

Questions	Responses	n	%	χ^2 value	p-value
Do you think teeth must be well aligned?	Yes	677	91.5%	509.454	<0.001*
	No	63	8.5%		
Are you aware about importance of aligned teeth?	Yes	484	65.4%	70.249	<0.001*
	No	256	34.6%		
Do you think your tooth are well aligned?	Yes	295	39.9%	30.405	<0.001*
	No	445	60.1%		
What is the main concern regarding the teeth?	Forwardly/Downwardly placed teeth	577	78.0%	1109.05	<0.001*
	Spacing between the teeth	66	8.9%		
	Irregularly placed teeth	42	5.7%		
	None	55	7.4%		
Do you think aligned tooth are important for facial appearance?	Yes	725	98.0%	681.216	<0.001*
	No	15	2.0%		
Are you facing any problems regarding the malalignment?	Affecting appearance	695	93.9%	570.946	<0.001*
	Affecting function	45	6.1%		

Table 3. Gender wise comparison of responses to the study questionnaire using Chi Square Test

Questions	Responses	Males		Females		p-value
		n	%	n	%	
Are you facing any problems while having food?	Yes	32	8.5%	63	17.8%	<0.001*
	No	345	91.5%	290	82.2%	
If Yes, what is the problem?	Difficulty in chewing on both sides	28	87.5%	13	20.6%	<0.001*
	Difficulty in swallowing	0	0.0%	7	11.1%	
	Pain in jaw while chewing	4	12.5%	43	68.3%	
Is there any speech difficulties?	Yes	11	2.9%	43	12.1%	<0.001*
	No	372	97.1%	312	87.9%	
If Yes, What difficulty?	Difficulty to tell any words	0	0.0%	19	44.2%	<0.001*

**Table 3.** Gender wise comparison of responses to the study questionnaire using Chi Square Test

Questions	Responses	Males		Females		p-value
		n	%	n	%	
	Any Speech Sound Disorders/Articulation Disorders	0	0.0%	0	0.0%	
	Any difficulty in speaking fluently	15	100.0%	24	55.8%	
Do you think irregularly tooth cause decay?	Yes	80	20.9%	75	21.0%	<0.001*
	No	302	79.1%	282	79.0%	
Do you think irregularly tooth cause gum problems?	Yes	27	7.0%	69	19.3%	<0.001*
	No	356	93.0%	288	80.7%	
Do you think irregularly tooth can make brushing more difficulty?	Yes	62	16.2%	137	38.4%	<0.001*
	No	321	83.8%	220	61.6%	
Do you face any difficulty while breathing?	Yes	8	2.1%	54	15.1%	<0.001*
	No	375	97.9%	303	84.9%	
Do you avoid smiling in public places?	Yes	34	8.9%	69	19.3%	<0.001*
	No	349	91.1%	288	80.7%	
Do you avoid social gathering due to your appearance?	Yes	58	15.1%	61	17.1%	<0.001*
	No	325	84.9%	296	82.9%	
Do you hide your teeth while speaking?	Yes	15	3.9%	15	4.2%	<0.001*
	No	368	96.1%	342	95.8%	
Are you aware of importance of teeth and jaw?	Yes	356	93.0%	302	84.6%	<0.001*
	No	27	7.0%	55	15.4%	
Do you think teeth must be well aligned?	Yes	334	87.2%	343	96.1%	<0.001*
	No	49	12.8%	14	3.9%	
Are you aware about importance of aligned teeth?	Yes	289	75.5%	195	54.6%	<0.001*
	No	94	24.5%	162	45.4%	
Do you think your tooth are well aligned?	Yes	147	38.4%	148	41.5%	0.39
	No	236	61.6%	209	58.5%	
What is the main concern regarding the teeth?	Forwardly/Downwardly placed teeth	291	76.0%	286	80.1%	0.04*

**Table 3.** Gender wise comparison of responses to the study questionnaire using Chi Square Test

Questions	Responses	Males		Females		p-value
		n	%	n	%	
	Spacing between the teeth	44	11.5%	22	6.2%	
	Irregularly placed teeth	24	6.3%	18	5.0%	
	None	24	6.3%	31	8.7%	
Do you think aligned tooth are important for facial appearance?	Yes	379	99.0%	346	96.9%	0.04*
	No	4	1.0%	11	3.1%	
Are you facing any problems regarding the malalignment?	Affecting appearance	352	91.9%	343	96.1%	0.02*
	Affecting function	31	8.1%	14	3.9%	

Discussion

Malocclusion is defined as an abnormality of the teeth or a mal relationship of the dental arches beyond the variety of exactly what is accepted as regular. Malocclusion is known to interfere not only aesthetic but functional and psychosocial aspects of children¹. However, in India awareness and knowledge about malocclusion and its impact on oral health is very limited. Various Studies by Sardenberg et al, Martin Junior et al concluded that the children with malocclusion experienced a greater negative impact on oral health related quality of life than those without malocclusion and that more severe malocclusions had a greater impact with regard to social, emotional and functional aspects^{10,11}.

In the recent times, the literature suggests that malocclusion have deleterious effect on quality of life such as increased pressure on oral musculature, disturbed sleep, pain in jaw, pain around the ear^{2,9}. However, parents and children are unaware of the correlation between malocclusion to the same. Hence in order to identify these problems, diagnose and treat effectively, it is very important to create knowledge and awareness of the same.

Though transient malocclusion in mixed dentition such as end-on molar relation, ugly duckling stage, lower anterior teeth crowding are self-correcting. Clinical findings such as anterior open bite, overjet, anterior crossbite and posterior crossbite mandates for early diagnosis and management. In order to avoid any further functional harm and negative impact on the quality of life

of children⁵. The advantages of early detection and prevention or interception of any developing malocclusion includes the reduced treatment duration, cost effectiveness, reduced emotional and psychological effects thereby increasing the overall patient acceptance as most of the times parents do express greater interest in the orthodontic treatment of their children than the children themselves⁷.

Results of our study showed general awareness and knowledge on impact of malocclusion on functional and esthetics of an individual is very limited. And very few studies done on the same objective as well, compare to other area such as dental caries or trauma.

Conclusion

Malocclusion is also considered as one of the most prevalent etiologies affecting the quality of life of an individual. This survey furnishes the background data to get insight into the status of awareness of schoolchildren aged 8–12 years regarding malocclusion and its affects on oral health, which is shown to be limited. We recommend establish various awareness programs under school dental health programs, to cater to the needs of the population of all strata. This suggests for more educational and awareness programmes amongst parents, teachers and students.

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