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Pediatrician's knowledge and practical approach towards malocclusion in Tamil Nadu, India

K S Premkumar[1], P Kayalvizhi[1,*], S Sumalatha[1], N Narendran[1]

[1] *Dept. Of Orthodontics and Dentofacial Orthopedics, Ultra's Best Dental Science College & Hospital, Madurai, Tamil Nadu, India*

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ABSTRACT

Introduction: Paediatricians are the first health professional who are more likely to encounter the children's problems during developing years. Their knowledge and skill to identify the intraoral health issues is of prime importance for making appropriate decisions about referral for early effective intervention, most likely with the maxillomandibular relationship. The aim of the study to evaluate the knowledge and practical approach of the paediatricians towards identification of malocclusion and its effects on oral health issues.
Material and Methods: A cross sectional questionnaire based study (30 questions) was conducted among 240 randomly selected pediatricians in South district of Tamil Nadu, India, about the knowledge in oral health and malocclusion. This study was carried out for three months time period and response to questionnaires were tabulated in Microsoft Excel software and sent for statistical analysis.
Results: This study results indicate that the knowledge about malocclusion and orthodontic treatment among the study population was low. Among the total participants 92% of the pediatricians agreed that their role in identification and prevention of malocclusion is inevitable, but the implementation of the same in their daily practice was comparatively less (16%). This was due to their opinion that identification of malocclusion is more difficult and time-consuming process in their routine daily practice (88%).
Conclusions: Pediatrician's have to be emphasized on the importance of normal relationship of dental structures in children and their knowledge regarding malocclusion should be enlightened to decrease the severity of the same in children during their later period of the life.

1. Introduction

Oral health has a serious impact on children's general health, as early child hood caries may lead to improper digestion, low weight, speech impediment and poor aesthetics. The dental caries in children were suggested to be one of the risk factors for infective endocarditis.[1,2] So Infants and children health assessment by pediatrician should also include oral assessment. By initiating oral screening at younger age, the overall need for complex dental treatment like orthodontic therapeutic permanent tooth extraction and orthognathic surgery is decreased at later stage of life.

According to a study done by Radha Krishnan et al in 2011, prevalence of malocclusion in primary dentition in Tamil Nadu was found to be 62.5%.[3] In Indian scenario, children visit pediatricians more frequently especially at early age for their general health issues.[4] So Pediatricians have a unique opportunity to emphasize the importance of oral health and developing malocclusion to the children and parent at an early age.[5,6] Hence it is of utmost importance for the pediatrician to include dental screening as a part of their routine health check up in order to identify the early signs of malocclusion and thus be able to refer the children

* *Corresponding author*.
E-mail address: sujismartdent@gmail.com (P. Kayalvizhi).

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to an orthodontist for further management.

The main aim of early orthodontic treatment is to correct the existing (or) developing skeletal, dento alveolar and muscular imbalances which will improve the orofacial environment and enhance the treatment outcome and its stability over the years.[7,8] Thereby it promotes optimal function, periodontal health, aesthetics and overall quality of life.[9,10]

Early recognition of malocclusion plays a huge impact over the treatment result in the children. Out of all Allergic rhinitis and adenotonsillar hypertrophy are the two most common functional problems that affect and alter the developing craniofacial structure.[11,12] Posterior cross bite which is considered as an orthodontic emergency should be corrected in early phase, otherwise may leads to facial asymmetry at a later period of the life.[13] Inadequate lip seal and increased overjet due to proclined incisors can be corrected effectively with simple appliances especially at early stages of treatment.[14] This will provide early stability, avoid frequent trauma to dentition and also improves the psychological impact thereby improves the self confidence of the child.[15]

Hence the aim of this study was to assess the knowledge of paediatrician in diagnosing early orthodontic problems and their attitude towards orthodontic treatment.

2. Materials and Methods

A cross sectional questionnaire based study was conducted among randomly selected pediatricians, Tamil Nadu, which was carried out from November 2019 to January 2020. List of 350 pediatricians with their contact details were obtained from Indian Academy of Pediatrics Tamil Nadu. Out of 350 members only 240 pediatricians were approachable from their given contact details. Hence there 240 pediatricians were contacted via phone call and explained about the study procedure. Their verbal consent was obtained and questionnaires were sent to them individually using digital communication. (Gmail and whatsapp)

A questionnaire comprising of 30 questions was formulated and stratified in to three parts. First part (8 questions) (Annexure 1) included demographic data, such as age, gender, qualification practice setting, number of years in practice, number of patients per day, previous dental experience, and sources of information about dentistry. Second part (10 questions) (Annexure 2) of the questionnaire was directed to assess their knowledge about the specific orthodontic anomalies such as normal relationship of maxilla and mandible, cause & features of malocclusion, role of caries , systemic diseases and nutrition influences on developing malocclusion. Third part (12 questions) (Annexure 3) of the questionnaire was targeted to assess their attitude towards identification of orthodontic problem and referral to treatment in daily practices

2.1. Statistical analysis

The obtained data was tabulated using Microsoft Office Excel 2013. Statistical analysis was performed using the SPSS software (version 19, SPSS Inc., Chicago, IL, USA). Frequency distribution was generated for all the variables and measures of central tendency were generated for all numerical values. Wilcoxon test was used to assess the correlation between two independent variables ($p< 0.05$).

3. Results

Out of 240 pediatricians 170 members participated in the study. Demographic data of the participants are tabulated in Table 1, which showed that participants are aged from 24-60 years with mean age of 40years. Among them predominant participants were males (62%) followed by females (38%). Stratification based on the place of practice leveled that 30% of them practicing in government hospitals, 8% in medical college and majority of 62% were in private sectors (private hospital and clinic). The number of outpatients in their daily practice was ranged from 8-28 with mean value of 18.322+10.56. Among the total participants only 20% had history of personal dental experience.

Assessments of the knowledge among the participants are presented in Table 2. Among the participants 52% have known the exact meaning of malocclusion. Regarding etiology of malocclusion 72% agreed that genetics is the one of the most important etiologic factors of malocclusion and 44% of them opted for other causes of malocclusion like malnutrition, premature loss of primary teeth and abnormal habits like thumb sucking. A total of 88% of the participants were able to identify the features of malocclusion but only 50% of them agreed the importance of prevention of malocclusion by early detection at mixed dentition period. 100% of the participants agreed that there is a relation between malocclusion and nutritional deficiency. Ideal age for first dental examination was correctly identified by 44% of them but only 12% could identify the relationship of maxilla to the mandible.

Table 3 depicts the overall view of participants towards the malocclusion and its implementation to their daily practice. About 92% of them agreed their role in identification and prevention of malocclusion but the implementation of the same in their daily practice was comparatively less (16%). This was due to their opinion about identification of malocclusion which is more difficult and time consuming process in their routine daily practice (88%). Regarding to the referrals, it was noticed that 20% of the children who presented with mouth breathing were in need of a referral, but other causes such as thumb sucking were not considered (6%) for their referral.

Of the 170 participants only 22% agreed that malaligned teeth can cause behavioural changes in a child and 100% of them accepted malocclusion can cause frequent anterior

teeth fracture, lip injury, and nutritional deficiency (80%). Unfortunately 100% of them did not agree about the need of orthodontic treatment for a child with developmental delay.

Regarding participants view on success of orthodontic treatment 58% had positive opinion 28% had negative opinion and 14% had mixed response. The participants less than 40yrs stated that identification of malocclusion is difficult and time-consuming ($p<0.05$).

Table 1: Demographic characteristics of the study population

Parameters	Mean ± SD/N (%)
Age	40.80 ± 9.97
Gender	
F	64.6 (38.0%)
M	105.4 (62.0%)
Qualification	
Dch	78.2 (46.0%)
Dip	23.8 (14.0%)
Postgraduate	10.2 (6.0%)
MD	57.8 (34.0%)
Practice Sector	
GH	51 (30.0%)
Medical college	13.6 (8.0%)
Private	105.4 (62.0%)
No Of Yrs In Practice	9.86 ± 6.38
No Of Patients Per Day	18.32 ± 10.56
Previous Dental Experience (Yes)	34 (20.0%)

Table 2: Depicts the response of the study population toward knowledge of orthodontics

Meaning of malocclusion	
Genetic as a Etiological Factor	88.4 (52.0%)
Other Causes Of Malocclusion	122.4(72.0%)
Features Of Malocclusion	74.8 (44.0%)
Prevention By Early Detection	149.6 (88.0%)
Appropriate Age For First Dental Examination	170 (100.0%)
Spacing In Primary Dentition (2-6 Yrs)	81.6 (48.0%)
Relation Between Malocclusion Systemic Infection and Disease, Nutritional Deficiency	44.2(26.0%)
Relationship Of Maxillary And Mandibular Teeth	170 (100.0%)
	20.4(12.0%)
Carious Primary Teeth	17 (10.0%)

Table 3: Regarding attitude of pediatrician towards orthodontics in daily practice

Pediatrician Role In Identifying & Preventing Malocclusion (Yes)	1 56.4(92.0%)
Identifying Malocclusion Is Difficult / Time Consuming In Practice (Yes)	149.6(88.0%)
Will You Look For Occlusion During Routing Oral Examination (Yes)	27.2(16.0%)
Malaligned Teeth Should Be Referred To Dentist (Yes)	170 (100.0%)
Should Collaborate With Orthodontist (Yes)	159.8 (94.0%)
Will Malaligned Teeth Affect Personal Behaviors (Yes)	37.4 (22.0%)
Will You Refer Thumb Sucking To Dentist (Yes)	10.2(6.0%)
Can Malocclusion Cause Nutritional Deficiency (Yes)	142.8(84.0%)
Can Malocclusion Cause Anterior Teeth Fracture Lower lip Injury (Yes)	50 (100.0%)
Will Developmental Delay in the dentition of the Child Needs Orthodontic Opinion (No)	50 (100.0%)
View About Appliance In Correction Can Correct Or Not	
A (Negative)	47.6 (28.0%)
B (Mixed)	11.9 (14.0%)
C (Positive)	98.6(58.0%)
Will You Refer Mouth Breathing To Dentist	34 (20.0%)

4. Discussion

According to Lischer, the golden age for orthodontic treatment would be between ages of 6 to 14 yrs.[16] An ideal orthodontic set up should devote 45% of the total case to corrective mechanotherapy, 10% to observational and preventive procedure, 20% to interceptive procedure and 25% to partial corrective mechanotherapy.[17]

In Indian scenario most of the young children frequently visit the pediatrician rather than dentist even for the dental related problems due to lack of awareness among the parents. Pediatricians are the persons who see the child very often at early age so the knowledge about the features of malocclusion is important there by aiding in early detection and identification about complex orthodontic problems. A timely referral can make a huge difference in the treatment results.

In our study 52% of the pediatrician knows exact meaning of malocclusion and only 43% of them identified normal maxillo mandibular relationship. This may show their lack of exposure towards the diagnosis of malocclusion. Only very few studies were conducted regarding orthodontic screening and referral from the pediatrician in the literature.[4–18] A study by Sharma et al., is in agreement with the present study, stated that 70% of the pediatricians knew the meaning of malocclusion.[4]

In a national survey with the 1618 post residential member of the American academy of pediatrics,[19] 90% of the responders agreed that they should examine the oral cavity and teeth. But only 16% of them implemented it in their daily practice. In our study 92% of the pediatrician agreed their roll in prevention of malocclusion, and 16% of them routinely implementing in their daily practice. Based

on the study results it can be considered that the prime reason for failure in implementation was the lack of time and difficulties in routine medical treatment.

According to American Academy of Pediatrics recommendation first dental visit for the child should be at the time of eruption of first tooth and not be later than 12 month.[20] They have not directed any recommended age to assess the occlusion in particular.

The malocclusion of the child not only affects the physical appearance of them further may leads to serious impact on their psychological aspect of the child. In our study only 22% of them agreed the statement.

This study reflects and emphasizes the role of pediatrician in identification of malooclusion. The most important point in this study is that, majority of them know about the sequence of developing malocclusion but their inability to communicate with the parents leads to the future consequences. This may be due to lack of update regarding orthodontic treatment and their modalities of treatment. So the importance of malocclusion as one of the factors in routine pediatric assessment should be added in future for welfare of the children.

5. Limitation

Generalization of the study is not be possible due to small sample size

Only one Indian study of the same kind was reported and there is no much data available for the comparing factor

6. Conclusion

Pediatrician's need to be emphasized on the importance of normal relationship of dental structures and explained about the importance of identifying the malocclusion at an early age of the child, there by referral to the specialist (orthodontist) for future management of malocclusion which causes lesser problems to the children at later stage of life.

Pediatrician knowledge regarding malocclusion should be enlightened to decrease the severity of treatment measures required for correcting them in most of the cases during the later period of the life.

7. Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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Author biography

K S Premkumar, Professor and HOD

P Kayalvizhi, 3rd Year Post Graduate

S Sumalatha, Reader

N Narendran, Senior Lecturer

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