Comparative Evaluation Of Preventive And Interceptive Orthodontic Treatment Need In School Going Children Between 6-9 Years And 9.1- 12 Years In Central India Population

Abstract:

Introduction: Preventive and interceptive orthodontics refers to, emphasizing on reduction of later need for complex orthodontic treatment. This would thus increase the comprehensiveness of healthcare and help in strengthening the primary care. In literature, there is no comparison between the preventive and interceptive treatment needs in patients belonging to growing age (6-9 years) and those belonging to non-growing age (9.1-12 years). There is a need to compare these finding according to the age group.

The present study aims to utilize the IPION to quantify the proportion of central Indian school going children who would gain from the preventive and interceptive orthodontics.

Materials and method: The observational study will be conducted in the department of Orthodontics and Dentofacial Orthopaedics, Sharad Pawar Dental College, Sawangi (M), Wardha in collaboration with The department of Public Health Dentistry, DMIMS (DU), Wardha. Total 383 patient in age group of 6 to 12 years, will be selected from the patients coming to Out Patient Department (OPD) of Orthodontics and Dentofacial Orthopaedics and screening camps that would be conducted in primary schools in and around Wardha. All the features of the IPION-6 and IPION-9 will be recorded, and the variables will be multiplied by weighting factors according to the instructions of the original study by Coetzee. All the features of IPION-12 will be recorded, and the variables will be multiplied by weighting factors.

Expected Results: There will be decrease in the need of orthodontic treatment in patients who have completed the age of 9 years.

Conclusion: No such study has been carried out to evaluate the interceptive and preventive orthodontic treatment need in children of age 9- 12 years. Thus, this study aims to evaluate it in the pre pubertal age group.

Keywords: Preventive orthodontics, interceptive orthodontics, IPION

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INTRODUCTION:

Preventive and interceptive orthodontics refers to, emphasizing on reduction of later need for complex orthodontic treatment[1]. This would thus increase the comprehensiveness of healthcare and help in strengthening the primary care.

The most fulfilling results can be obtained by proper diagnosis and treatment planning during the mixed dentition phase and thus have long-term stability than late treatment. These procedures significantly decrease the need for orthodontic treatment later[2].

There are a significant number of orthodontic indices that are already present. Some of these indices determine need of orthodontic treatment, whereas other indices assess the quality of treatment. There is only one index that determines the need for preventive and interceptive orthodontic treatment. The index for preventive and interceptive orthodontic need (IPION) by Coetzee, is the only such reported index[3].

The IPION only records the interceptive and preventive treatment need from 6-9 years. But there is no index to evaluate it during the pre-pubertal age, which is an important age group for preventive and interceptive orthodontics. Thus, it deems necessary to evaluate it during the age group of 9-12 years[4].

As the IPION is the only orthodontic index that measures preventive and interceptive orthodontic treatment needs, and as no published studies utilizing this index currently exists for the Central Indian population, research having the precession of measuring early orthodontic treatment need in this population is highly needed. Generating such data would be critical in spotlighting this important health problem. The present study aims to utilize the IPION to quantify the proportion of Central Indian school children who would benefit from preventive and interceptive orthodontic treatment.

AIM:

To evaluate and compare the preventive and interceptive orthodontic treatment need in the school going children between age 6-9 years and 9.1-12 years in central India population.

OBJECTIVES:

1. To evaluate the preventive and interceptive orthodontic treatment needs in school going children between age of 6-9 years and 9.1-12 years in central India population.
2. To compare the preventive and interceptive orthodontic treatment needs in school going children between age of 6-9 years and 9.1-12 years in central India population.
3. To compare the preventive and interceptive orthodontic treatment needs in school going boys and girls between age of 6-12 years in central India population.

MATERIAL AND METHODS:

STUDY DESIGN

The observational study will be conducted in the department of Orthodontics and Dentofacial Orthopaedics, Sharad Pawar Dental College, Sawangi (M), Wardha in collaboration with The department of Public Health Dentistry, DMIMS (DU), Wardha.

Total 383 patient in age group of 6 to 12 years, will be selected from the patients coming to Out Patient Department (OPD) of Orthodontics and DentofacialOrthopaedics and screening camps that would be conducted in primary schools in and around Wardha.

Inclusion Criteria

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- Patient with age group 6-12 years

Exclusion Criteria

- Patient with previous orthodontic treatment.
- Patient with ongoing orthodontic treatment.
- Patient with systemic disease.

Sample Size Calculation

Mean values are taken from article "Preventive and interceptive orthodontic needs among Syrian children by Ahmad S. Burhan et al"

The sample size was calculated by the for

$n = N*X / (X + N - 1)$,

where,

$X = Z\alpha/2^2\ p(1-p) / MOE^2$,

And $Z\alpha/2$ is the critical value of the normal distribution at $\alpha/2$ (e.g. for a confidence level of 95%, α is 0.05 and the critical value is 1.96)

MOE is the margin of error, p=50% is the sample proportion,

And N is the population size.

Margin of error= 5%

Confidence level = 95%

Population = 100000

Sample proportion= 50%

Total sample size is 383

There are total 3 groups. That is 128 per group.

METHODS:

All children to be examined will be selected from the patients coming to Out Patient Department (OPD) of Orthodontics and Dentofacial Orthopaedics and screening camps that would be conducted in primary schools in and around Wardha.

The data will be recorded while they were sitting in a chair using portable light (torch). Instruments include rulers, mouth mirrors and probes. All the features of the IPION-6, IPION-9

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and IPION-12 will be recorded, and the variables will be multiplied by weighting factors according to the instructions of the original study by Coetzee. Universal precautions and infection-control procedures will be taken[5].

The IPION-9 will be used for any child whose permanent maxillary central incisors are visible upon examination.

The IPION-12 will be used for any child whose permanent maxillary second premolars are visible upon examination**.**

On the basis of Coetzee's study, the overall scores will be divided into three categories of treatment need:

- The scores of 0–5 will be considered 'no treatment need;
- The scores of 6–14 will be considered 'moderate treatment need;
- The scores of 15 or higher will be considered 'definite treatment need.

The raw data will be recorded manually using scoring sheets specially designed for the present study.

All the features of the IPION-6 and IPION-9 will be recorded, and the variables will be multiplied by weighting factors according to the instructions of the original study by Coetzee.[6]

All the features of IPION-12 will be recorded, and the variables will be multiplied by weighting factors.[7]

Table 1: THE FIVE COMPONENTS AND THE WEIGHTING FACTORS OF IPION-12

Components Of IPION-12	Description of variable	Weighing factor
Primary component interproximal caries	i. Caries in maxillary and mandibular permanent incisors	1
	ii. Caries in the maxillary and mandibular permanent canines	1
	iii. Caries in the maxillary and mandibular permanent first premolars	2
	iv. Caries in the maxillary and mandibular permanent first molars	4
	v. Caries in the maxillary and mandibular deciduous second molars	4
Over retained primary teeth	i. Over retained maxillary and mandibular deciduous canines	1
	ii. Over retained maxillary and mandibular deciduous first molars	2
Anterior component	i. Supernumerary teeth	4
	ii. Ugly duckling stage	4

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Posterior component	i.	Rotation of maxillary first permanent molars	4
	ii.	Tipping of maxillary first permanent molars	4
	iii.	Rotation of maxillary first permanent premolars	3
	iv.	Tipping of maxillary first permanent premolars	3
Occlusion	i.	Overjet	2
	ii.	Anterior cross-bite	10
	iii.	Overbite	1
	iv.	Anterior open-bite	4
	v.	Posterior cross-bite without functional lateral shift of the mandible during closing	1
	vi.	Posterior cross-bite with functional lateral shift of the mandible during closing	10
Soft- tissue assessment	i.	Lip competency	1

STATISTICAL ANALYSIS

The χ^2 test will be used to detect statistical difference between the indices and the sex groups. A P value of 0.05 or less is considered to be statistically significant.

SCOPE

It will help us to evaluate the interceptive and preventive treatment needs of children of age 6-12 years in Central India.

EXPECTED OUTCOME:

Due to commencement of growth in the patients of age 9 years, it may be observed that, there will be decrease in the need of orthodontic treatment in patients who have completed the age of 9 years.[8]

DISCUSSION:

This study will help us compare the interceptive and preventive treatment need in patients of growing age and patients of non-growing age. Few studies on interceptive orthodontics were reviewed[9-12].

Karaiskos N et. al. (2005) conducted a study for assessing the potential for early recognition of developing malocclusions A custom-made index (IPION) was developed to calculate the need for such treatment in school children aged 6 and 9 years.

Two calibrated examiners examined each child independently and assessed several components of his or her occlusion. A high prevalence of caries in the deciduous and early loss of primary teeth was observed. A large number of children suffered from crossbite or open bite. Future orthodontic problems were found in 28% of this population.

Onyeaso CO (2004) conducted a study for assessing the needs for preventive/interceptive orthodontics in children of age 7-10 years in Ibadan with a sample size of 493 school children. They were all examined in their school. The study showed that about 27% of the children had needed one form of preventive/interceptive orthodontic treatment or the other.

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Onyeaso CO et. al. (2003)The study was done to calculate the nature of orthodontic demands in the unit that could benefit from preventive and interceptive treatment so as to enhance treatment planning, teaching and further research Ninety-three (76.9%) of these children had retained deciduous anterior teeth while 9.1% had proclination of maxillary anterior teeth with moderate spacing. Based on dental history and clinical examination, nine (7.4%) children were involved with oral habits, seven (5.8%) and one (0.8%) had anterior crossbite and supernumerary teeth, respectively. The remaining 39.5% needed full-blown orthodontic treatments.

CONCLUSION

No such study has been carried out that compares need for preventive and interceptive treatment in growing and non-growing patients. Thus this study aims to compare it in children of age 6-9 years and 9.1-12 years and thus, classify it into no treatment need, moderate treatment need and definite treatment need.

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