Original Research Article

PREVALENCE OF ORAL SCREEN APPLIANCE THERAPY IN 6-12 YEAR OLD CHILDREN VISITING A UNIVERSITY DENTAL HOSPITAL - A RETROSPECTIVE STUDY.

Running title : Prevalence of oral screen in 6-12 year old children.

ABSTRACT:

The oral screen is a versatile and simple myofunctional instrument that is used to treat dental arc deformities early in the interception. A lip training device was described as an oral screen. Oral screens can be used for people who have bad habits such as mouth breathing , chewing nails, big overjet and lip muscle hypotonus. A sample of 4355 patients of age 6-12 years visiting the hospital were taken. We reviewed patients records, analysed data of 7415 patients between June 2020 to March 2021 and clinical findings are recorded. Out of the sample size 4355,260 patients in the hospital database were diagnosed with orthodontic deformities and use of oral screen was recommended.The data is then tabulated in microsoft excel. Chi square test is used for comparison of groups. The data is analysed with the help of SPSS software..In this study we observed that 3.8% of the total patients (260) showed incidence of undergoing treatment using oral screen. Prevalence of oral screen appliance is observed to be more in age groups between 10-12 years followed by 6-9 years. Within the limitations of the study, 0.2% of the children visiting university hospital have undergone treatment using oral screen appliances.

KEYWORDS: Oral screen appliance , mouth breathing ,children, orthodontic appliance and treatment, innovative technique.

INTRODUCTION:

The oral screen is a versatile and simple myofunctional instrument that is used to treat dental arc deformities early in the interception. It is necessary to establish better muscle balance between the tongue and the buccinator mechanism, and to restore normal growth and development(1)(2). Functional devices refer to a variety of devices designed to modify the structure of different muscle groups which influence the function and the location of the mandible to transmit strength to the dentition and basal bone(3). Newell introduced it for the first time in 1912. In Britain before the Second World War, oral screens were routinely used(4). Kraus created a double oral screen and differs from the oral screen to the vestibular screen(5) . Later on, Hotz, Nord and Fingeroth were in favour of oral screening(6–8).

In recent years, there has been questioning the importance of intermittent forces from the lips, cheeks and tongue for the position of the teeth(9).This is particularly true of the forces exerted during swallowing and speech, while the constant strength of the rest of the muscles is assumed to be significant.Incompetent lips may contribute to the protuberance of the teeth by reducing the pressure on the teeth from those in the lips (10).

A lip training device was described as an oral screen. The screen extends the lip muscles and gives a reverse force to proclamation incisors(11). At the same time the arc of the lips are strengthened. If a loop is provided on the labial surface, the training effect can be increased(12). The tendency of the screen to discharge from the mouth causes the lips to contract with the external force when the loop is tightened by finger strength(13). It is believed to strengthen the lips in the regular application of external force with accompanying lip contraction; that is to say, the lips will be able to exercise more force as a result of their training(14).Our team has extensive knowledge and research experience that has translate into high quality publications(15–27) (15–27)(28–30)

Oral screens can be used for people who have bad habits such as mouth breathing , chewing nails, big overjet and lip muscle hypotonus(31)(32). The oral screen is one of the choices(33,34). The objective of the study was to assess the prevalence of oral screen appliances in 6-12 year old children visiting a dental hospital .

MATERIALS AND METHOD:

This retrospective study examined the records of patients from 01 june 2020 to 31st march 2021 who visited university dental hospital. Ethical Approval was taken from the institutional review board/ SDC/SIHEC/DIASDATA/0618-0320. The study population included patients with age ranging between 6-12 years. The study sample included both male and female gender, predominantly south indians.

The study population was 7415 pediatric patients who visited university hospital. Sample size was 4355 pediatric patients in which 260 patients in the hospital database were diagnosed with orthodontic deformities and use of oral was recommended. The necessary data such as age, gender and number of people undergone treatment was recorded. Incomplete patient records

were excluded.Data was recorded in Microsoft Excel and exported to the statistical package of social science for windows (SPSS) and subjected to statistical analysis. Chi square tests are used for comparison of groups.

RESULTS AND DISCUSSION :

The study sample consisted of 4355 patients,in which about 260 patients were recommended the use of oral screen appliances . Out of 260 about 139 children belonged to the age group between 6-9 years and 121 children belonged to the age group between 10-12 years (Graph -1). Among 260, 137 of the children were boys and 123 of the children were girls (Graph -2).

Among 260 patients only 10 underwent treatment with oral screen appliance and remaining 250 did not opt for the treatment with oral screen appliance(Graph -3).

When age and treatment were compared, Children in groups 6-9 years, out of 139 children only 4 underwent treatment with oral screen and 135 underwent treatment without oral screen. Children in the group 10-12 years, out of 121children only 6 underwent treatment with oral screen and 115 underwent treatment without oral screen (Graph -4).

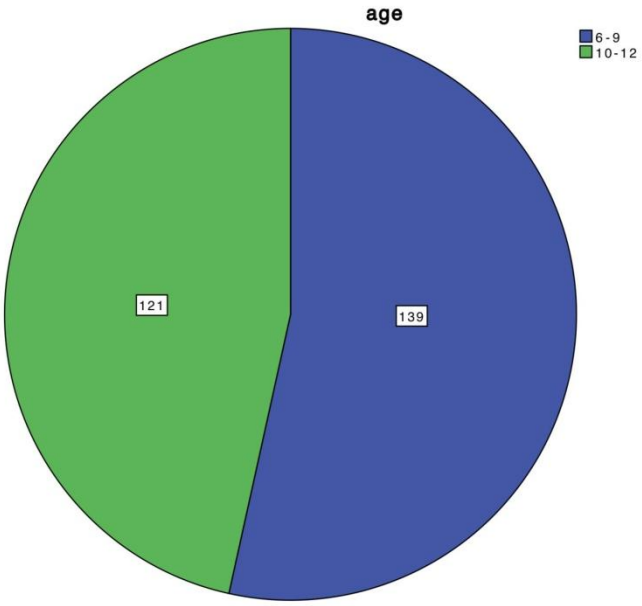
When gender and treatment were compared, out of 137 boys only 6 boys underwent treatment with oral screen and 131 underwent treatment without oral screen. Out of 123 girls only 4 girls underwent treatment with oral screen and 119 underwent treatment without oral screen (Graph -5).

This study found that of 4355 patients attending the university hospital ,260 were advised of the use of oral screen appliance, out of which only 10 underwent treatment using oral screen appliance.

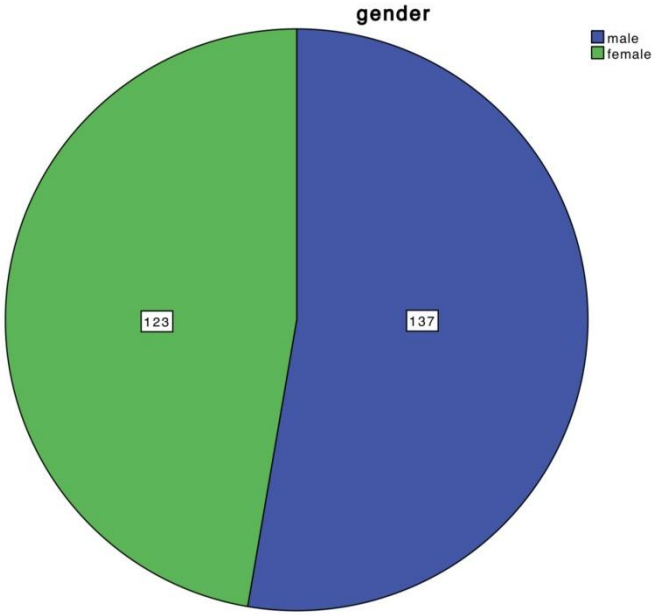
The prevalence was 0.2 % which is almost equal compared to the study of casely(35) .The results of oral screen appliance are similar to the results of other studies conducted in Asian region(36) . The prevalence of male who underwent the treatment was more than the female which is similar to the study of yasui (37).

Early diagnosis and treatment should be followed in these patients to improve the quality of their life by preventing the crowding of teeth.The limitation of this study was, since our study was carried out in a unicenter study in the South Indian population, it cannot be generalised into any other population. Other cases which could underestimate the common occlusal properties were not included in addition to orthodontic cases. Subjects for direct examination are not available.Further research is needed as it is related with esthetics and has a functional concern.

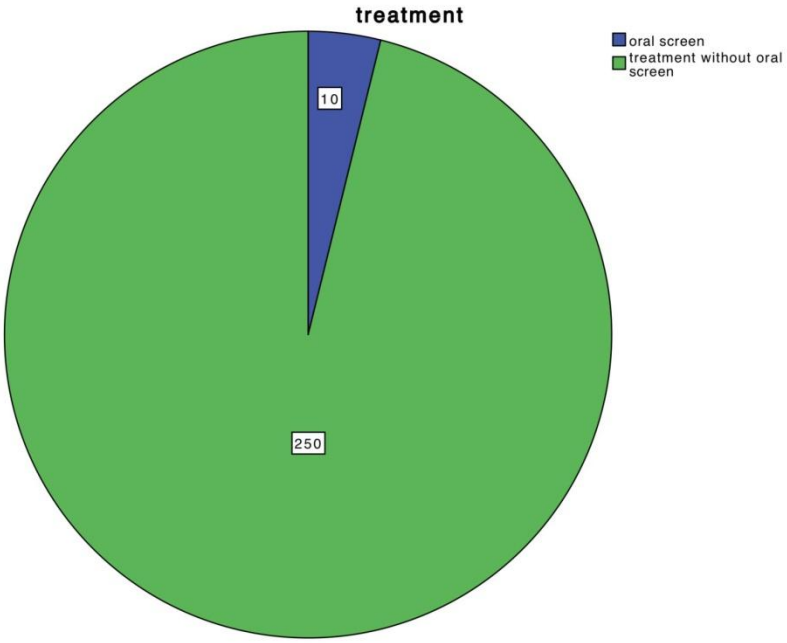
For additional diagnosis and treatment planning, the study may be extended. Proper advice on early correction awareness is necessary. The research thus serves as proof and adds to the consensus that may be used with the broader population and clinical studies for further studies.



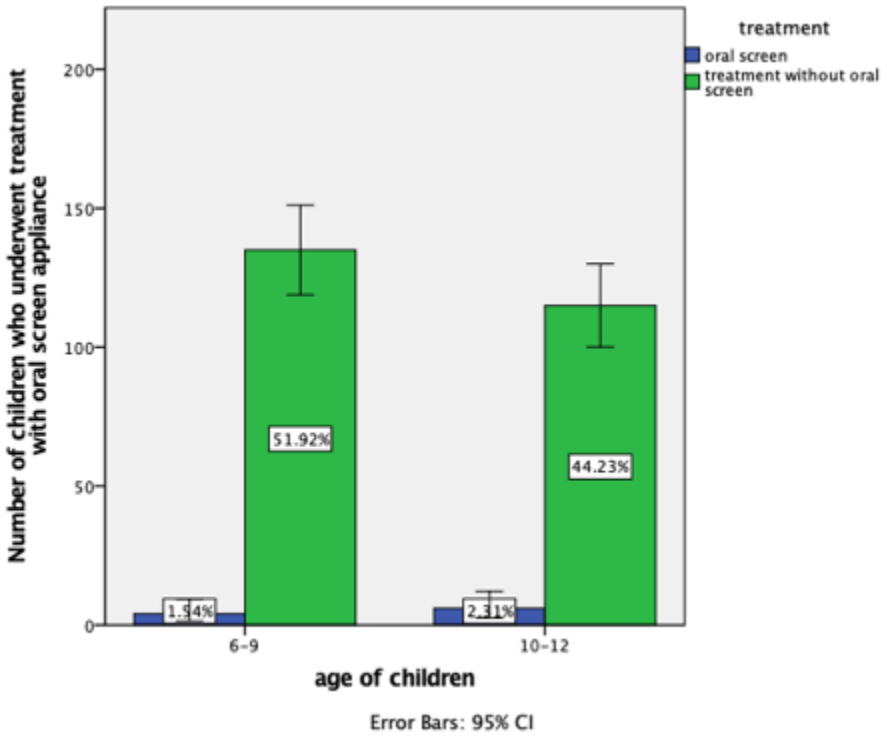
Graph 1 : Pie chart showing age distribution of children in sample population requiring oral screen appliance therapy. Dark blue colour denotes children of age group between 6 to 9 years and green colour denotes children of age group between 10 to 12 years. 121 of the children belonged to the age group of 10 to 12 years and 139 of the children belonged to the age group between 6 to 9 years.



Graph 2 : Pie chart showing gender distribution of children in sample population requiring oral screen appliance therapy. green colour denotes girls and blue colour denotes boys. 137 of the children were boys and 123 of the children were girls.

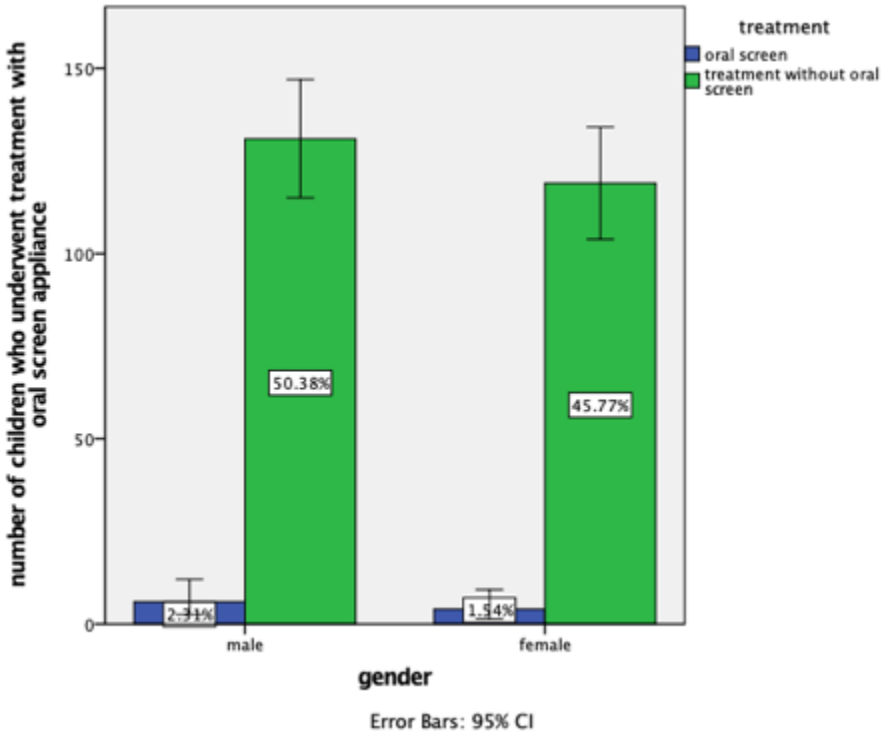


Graph -3 : Pie Chart showing prevalence of treatment in the study population where blue colour denotes treatment with oral screen appliance.Green colour denotes treatment without oral screen. Prevalence of oral screen appliance was only 0.2%, out of 4355 patients 260 patients was suggested with oral screen appliance therapy but only 10 patients underwent oral screen appliance therapy.



Graph 4: Barchart shows the association between various age groups and treatment .X axis represents age group and Y axis represents frequency distribution of treatment. Blue colour denotes treatment with oral screen appliance, green colour denotes treatment without oral screen appliance . Age group of 10-12 has more patients(6) using oral screen for treatment when compared to age group 6-9(4).Chi square test was done and the association was found to be not significant.(p value was =0.757 p >0.05 statistically not

significant). The maximum number of people using oral screen was seen in the age group of 10-12 years old however the difference was not significant.



Graph -5: Barchart showing association of treatment with gender. X axis represents gender and Y axis represents frequency of treatment.Blue colour denotes treatment with oral screen appliance, green colour denotes treatment without oral screen appliance. Between boys and girls, boys have undergone treatment with oral screen more than the girls . Chi square test was done and the association was found to be not significant.(p value was =0.223 p>0.05 statistically not significant).The maximum number of people using oral screen was seen in males rather than females .

CONCLUSION:

Within the limits of the study, About 0.2 % of children visiting university dental hospitals among 4355 had the prevalence of oral screen appliances. Children of 10 to 12years had significantly higher prevalence of the oral screen appliance therapy . Higher prevalence of treatment with oral

screen appliance was seen in boys (131) than in girls although the difference was not statistically significant (p=0.223).

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