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REVIEW ARTICLE

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Parental Acceptance Towards Interceptive Orthodontic Treatment in Children - A Retrospective Study

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ABSTRACT

Malocclusion is a common oral disease mostly affecting children. The prevalence rate of which varies with numerous factors. Early implementation of interceptive orthodontics can prevent further complication and other expensive orthodontic treatment. The aim of the study is to evaluate the acceptance rate of interceptive orthodontic treatment in children with malocclusion. It is a university hospital setting study where the patient records were reviewed. About 1147 patients were identified in the age group 6-11 years with malocclusion who require interceptive orthodontic treatment.The parameters such as patient age,gender, acceptance towards treatment were gathered and the corresponding data was imported in excel spreadsheet and statistical analysis was performed. The results reported that there were 44.8% females and 55.2% males in the age group of 6-8 yrs and 43.5% females and 56.5% males in the age group 9-11 yrs . Only 8.63% of patients were willing to accept preventive and interceptive treatments. Patients in the 6-8 yrs age group were more willing to accept interceptive treatment than patients in the 9-11 yrs age group. This was found to be statistically significant.Within the limits of the present study, it can be concluded that 36.6 % of the children between 6-11 yrs requires interceptive orthodontic treatment among which only 8.63% were willing to accept which shows the existence of a lack of awareness.

ARTICLE HISTORY

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KEYWORDS

Acceptance towards treatment, Children, Interceptive orthodontics, Prevention of future malocclusion, Treatment needs

INTRODUCTION

Malocclusion can be defined as the malalignment between the arches or within the arches in any plane or any anomalies in the tooth position.[1] Malocclusion is a common oral disease[2] generally affecting children. The prevalence rate of which depends on numerous factors.[3] The most common causes for the development of malocclusion are genetic , environmental, systemic causes and harmful oral habits.[4] Malocclusions can be perceived as an oral disease which can abrupt normal oral functions such as mastication, aesthetics and also the quality of life of the individual [5,6]. There are numerous previous studies that are in compliance with the fact that malocclusion has a great impact on the quality of

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life. Since the public correlates a good dental appearance with being successful in many aspects and the society generally decides the rules for being acceptable and attractive.[7]. An individual with malocclusion might feel insecure about the appearance and may not present with the level of confidence that others may possess. Even though this might seem unethical and it is always never good to judge a person based on appearance, even though the society may not be doing this, the person affected most often feels the same.

Numerous cohort studies previously conducted have indicated that malocclusions in primary dentition most oftenly leads to malocclusion in the permanent dentition [8,9].The primary dentition[10] tends to play a very important role in the child's growth and development, not only in terms of mastication, proper speech, appearance and the prevention of harmful oral habits but also contributes in a big way to the guide and pave the path for the eruption of permanent successors.[11–15] Eruption of the permanent teeth following exfoliation of the primary teeth is a normal physiological process [16] which occurs during the mixed dentition period. The mixed dentition period is thus considered as the period of utmost importance as any factors like premature loss, proximal caries[17] during this period would disturb the normal physiological process, and result in loss of space and malocclusion in the permanent dentition.[18–20] The best way to prevent the developing malocclusion would be to preserve the primary teeth till normal time of exfoliation as they are the best space maintainers also known as natural space maintainers and in cases where this is not possible ,it must be replaced with a space maintainer.[21]This forms the crux of preventive and interceptive orthodontics.

Preventive orthodontics can be defined as the set of procedures which are implemented in the developing malocclusion to minimize the malocclusion, whereas interceptive orthodontics are done to interceptive the developing malocclusions as the name suggests.This helps in preventing extensive malocclusion and often expensive future orthodontic care. Preventive and interceptive orthodontic therapy also includes myofunctional and orthopaedic which aim at jaw changes correction during the developmental stage to prevent further surgical procedures in the future, along with space maintainers, habit therapy,serial extractions,crossbite,diastema correction,and expansion in certain cases. Preventive orthodontics mainly focuses on patients and parent's education[22–24], supervision of growth and development of dentition and craniofacial structures.

The need for orthodontic treatment in children varies in different parts of the world. There have been many previous researches which have focused on this aspect. The prevalence rate varies from 26.0% in India [25],87.0% in Brazil [26],83.94% [27]in Shanghai.

Previously we have focused our research on various invitro and invivo studies [28–43] We have currently shifted our focus to this retrospective analysis. Even though a lot of research has been focussed on the treatment needs, only a very little attention has been focused on the actual percentage of patients willing to undergo the treatment. This may vary due to numerous reasons like awareness among, patients, educational status,economic status,etc. However, there seems to be a lack of comprehensive information about the treatment needs and willingness of patients to accept treatment among the south indian population , thus this study aims to evaluate the acceptance rate of interceptive orthodontics in patients with malocclusion.

MATERIALS AND METHODS

The study was designed to be a retrospective observational study. The study was conducted as an institutional study with the advantage being a large data availability and the disadvantage being assessment of patients belonging to a similar geographic location. The approval was granted by the institutional ethical committee. The study included all patients within the age group 6-11 yrs who visited Saveetha dental college and hospitals from June 2019- February 2020.

The data obtained by reviewing the case sheets of patients visiting Saveetha dental college and hospitals, Chennai. First, patients who are advised for interceptive orthodontic treatment needs were filtered from the orthodontic case sheets, then patients who have undergone the corresponding treatments were filtered and data analysed. The collected data was photographically cross verified by two examiners.

Inclusion criteria

- Patients between the ages of 6-11 yrs
- Patient advised for interceptive orthodontic treatment

Exclusion criteria

- Patients with self correcting anomalies
- Medically compromised , patients with special needs

The data collected was analysed statistically using SPSS version 20.0 . Descriptive statistics and chi-square tests were performed and graphs plotted to arrive at final results. A p value of less than 0.05 was considered to be statistically significant.

RESULTS

The data analysis revealed that 36.6%patients require orthodontic treatment. Out of which there were 44.8% females and 55.2% males in the age group 6-8 yrs and 43.5% females and 56.5% females in the age group 9-11 yrs. In both the age groups, the number of males are more as shown in figure 1 but this may be attributed to the increased male count in the total number of patients visiting the dental institution . The data analysis revealed that only 8.63% of the patients accepted the treatment as shown in Figure 2.

Only 10.5% of the participants in the age group 6-8 years accepted the treatment and only 6.7% of the participants from the age group 9-11 years accepted the treatment. Patients in the 6-8 yrs age group were more willing to accept treatment than patients in the 9-11 years age group. This was found to be statistically significant ($p<0.05$) from Pearson's chi tests performed. (Figure 3).About 8.6% of females accepted the treatment and 8.5% of males accepted the treatment.There is a very slight increase in the acceptance rate of interceptive orthodontic treatment females, however, there was no statistically significant(p value>0.05) association between the genders and the acceptance rate of treatment according to Pearson's chi square tests.(Figure 4).

Malocclusion is one of the most common ranking third among worldwide public health dental disease priorities next to dental caries and periodontal diseases.[44]. Facial appearance and malocclusion can have a long lasting effect on an individual and can lead to negative effects on self image , peer group acceptance. The perception of orthodontic treatment needs are multifactorial and are being influenced to various degrees by many factors.

In order to prevent a major negative impact on the psychological aspects of children, children having malocclusion need to be identified as early as possible and corrective measures should be implemented. Early prevention and interception of malocclusion can reduce the burden of cost and more expensive treatment in the future.[45,46]

Tak M et al [5]in 2013 reported that the patients with orthodontic treatment needs were 33.3% and Reddy et al[47] reported that the prevalence of children requiring treatment were 28.6%. These results are comparable to those in our study, which might be due to the possible similarities in the geographic regions where the study was conducted. Heikinheimo et al [48]reported that interceptive orthodontic treatment needs was 28.6%which is quite similar to the results of our study. Al Nimri et al also said that 33% of the children required interceptive orthodontic treatment which is also comparable to the results of our study.

Patient's and parent's perception of malocclusion cannot be ignored. The patient's self-perception is of utmost importance in determining treatment demand and co-operation, while parents need to be considered as the most powerful one as they only tend to decide whether the child is going to undergo the treatment.[49]. When it comes to patient's knowledge about awareness , only 45.5% of respondents showed awareness that the first visit to orthodontist must be at age 7 - 8yrs as reported by Moshkelgosha et al [50].This will directly reflect on the acceptance rate of orthodontic treatments as only adequate knowledge about this problem will encourage them to make their children undergo treatment.

In regards to willingness to accept interceptive treatment , Heidi et al [51] in 2002 reported that only 15% of those who require treatment undergo treatment and Al Nimri et al [52] reported 20% of those in need underwent treatment. Even though both the values seem less ,it is much higher compared to the acceptance rate of treatment in our study (8.63%). These low treatment acceptance rates may be probably due to the untreated subject's satisfaction with their appearance irrespective of the individual's orthodontic treatment needs as reported by Spalj et al [49].

Adeyemo et al [53]reported that about one third of respondents experienced significant negative impact in the quality of life . The most affected domains were eating/diet variation and speech variation.Similarly, Weidel et al [54] reported that children wearing removable appliances experienced speech difficulties.This could probably be the reason why most patients and their parents fear such treatment options leading to poor acceptance rates of interceptive orthodontic treatments.

The results of our study revealed that there was no statistically significant difference between gender and the rate of acceptance of orthodontic treatment which is in agreement with the results of the study by Wedrychowska et al [55] and Weidel et al [54] which reported that no statistically significant dependence on gender of the children was found.

Sarah Mubaraki et al [56]stated that the majority of the patients were willing for space maintainers which is quite contrary to the results of our study. However, this would be due to different ethnicity,educational status of patients as well as economic status. A previous study by Moshkelgosha et al [50] showed significant effect of higher socioeconomic and educational status on parents' attitude and the substantial effect of higher socioeconomic status on the parents' knowledge. Sruthi et al [57] also reported that there is a significant difference in parent's knowledge reagrding early orthodontic treatment and myofunctional therapy due to education level.

This study also had its fair share of limitations, various other factors such as patient educational level and socioeconomic status could have an effect on the acceptance rate and these factors were not considered during the study . Thus, future studies need to be done, which focuses on the correlation between parent's economic status, literacy rates and the possible reason for not accepting the treatment as a next step towards understanding the patient's point of view and possible methods to combat the problem to prevent future complications.

CONCLUSION

Malocclusion is a common oral disorder in children. Early implementation of preventive and interceptive orthodontics can help prevent further complications and skyrocketing expenses of orthodontic treatment .Within the limits of the present study, it can be concluded that 36.6 % of the children between 6-11 yrs requires interceptive orthodontic treatment among which only 8.63% were willing to accept which shows the existence of a lack of awareness.Thus it becomes the primary responsibility of the dental health care professionals to educate the patient, their parents and create a general awareness about preventive and interceptive orthodontics and its benefits.

AUTHOR CONTRIBUTION

The data analysis , interpretation and writing of the manuscript was done by Ilankizhai which was commented on by all authors. Dr. Jessy P and Dr. Madhulaxmi provided conceptual and technical guidance for all aspects of research. All authors discussed the results and contributed to the final manuscript.

CONFLICT OF INTEREST

Nil

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Self

ETHICAL CLEARANCE

It is taken from "Saveetha Institute Human Ethical Committee" (Ethical Approval Number-SDC/SIHEC/2020/DIASDATA/0619-0320)

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TABLES AND GRAPHS

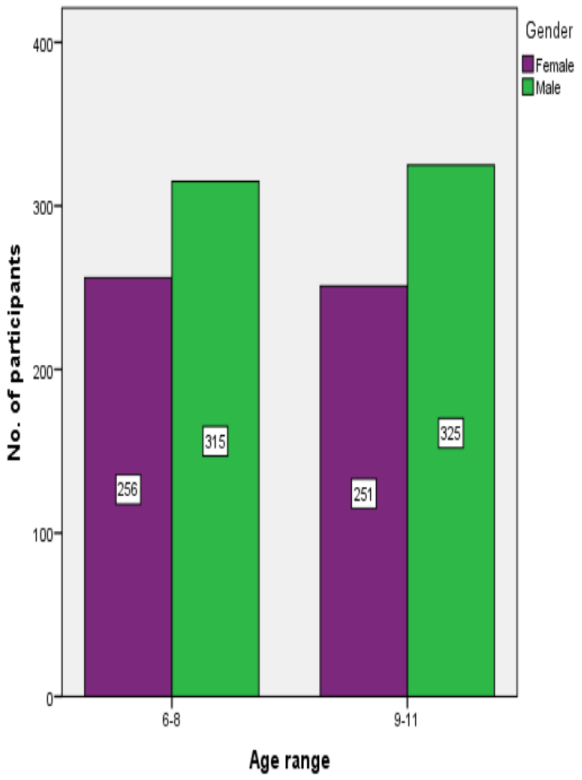

Figure 1 : The bar chart represents the number of males and females in 6-8 yrs age group and 9-11 yrs. X axis represents the different age groups and Y axis represents the number of participants in each group. There were 44.8% females (purple) and 55.2% males (green) in the age group 6-8 yrs and 43.5% females (purple) and 56.5% females (green) in the age group 9-11 yrs.

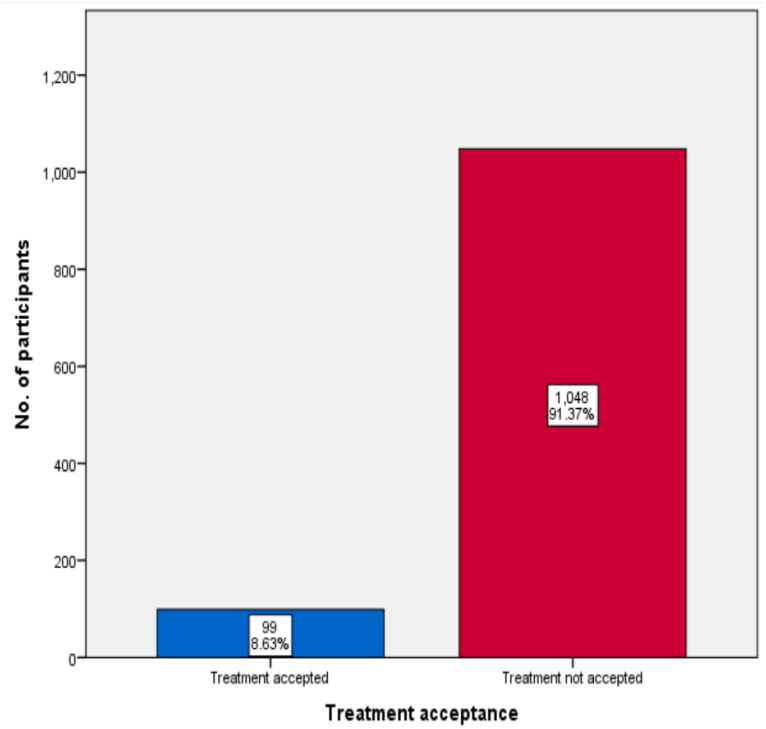

Figure 2 : The bar chart represents the percentage of patients who accepted treatment. X axis represents whether the participants accepted or did not accept the treatment and Y axis represents the number of participants in each category. Only 8.63% (red) were willing to accept the treatment.

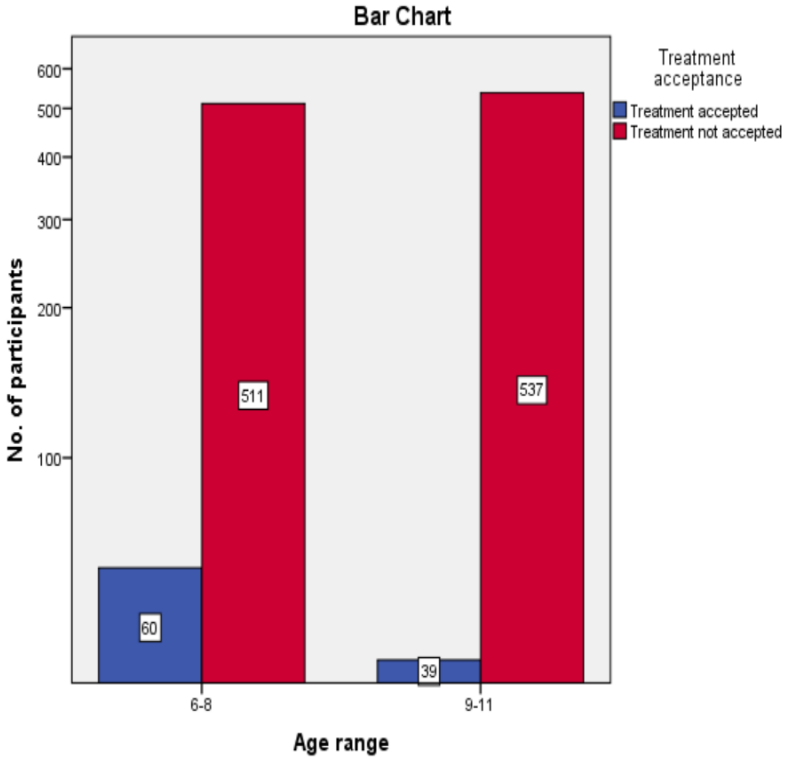

Figure 3 : The bar chart represents the association between treatment acceptance rate and different age groups. X axis represents the different age groups and Y axis represents the number of participants in each group. According to Pearson's chi-square tests there was a statistically significant increase in treatment acceptance (blue) of patients in the age group of 6-8 years than patients in the 9-11 years age group. (Pearson's chi square value- 5.07;p value- 0.02; p value <0.05)

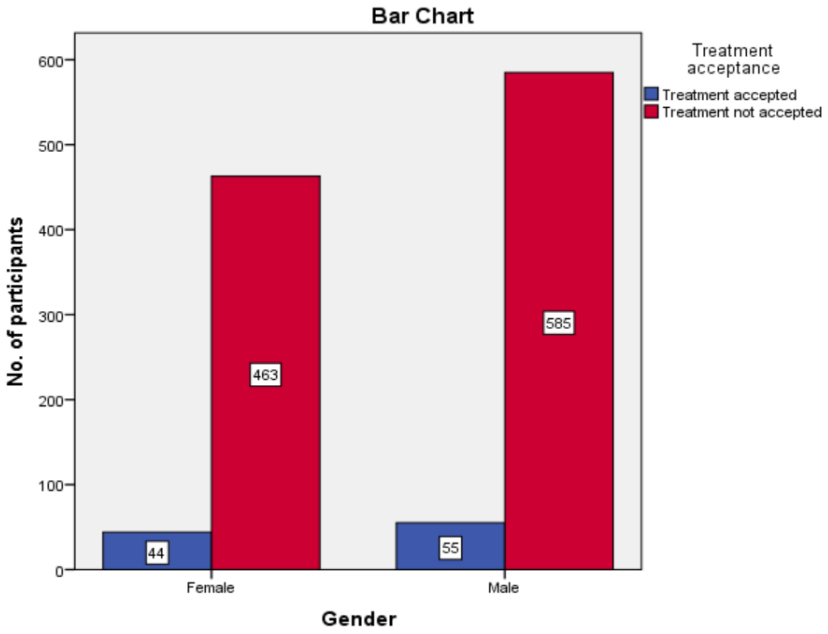

Figure 4 : The bar chart represents the association between treatment acceptance rate and gender. X axis represents the different genders and Y axis represents the number of participants in each group.There is a very slight increase in the acceptance rate (blue) of interceptive orthodontic treatment females, however according to Pearson's chi-square test there was no statistically significant association between the gender and the acceptance rate of treatment. (Pearson's chi square value- 0.003;p value -0.9; p value>0.05)