



Prevalence of Edentulism and Class 2 Malocclusion in a Known Population and Their Treatment with Complete Denture and Myofunctional Appliances, Respectively

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KEYWORDS

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ABSTRACT:

Background: This study was conducted to assess the prevalence of edentulism and class 2 malocclusion in a known population and their treatment with complete denture and myofunctional appliances, respectively.

Material and methods: This study was conducted to assess the prevalence of edentulism and class 2 malocclusion in a known population and their treatment with complete denture and myofunctional appliances, respectively. There were 100 subjects. Oral clinical examination was carried out in these subjects. The prevalence of edentulism and class 2 malocclusion was estimated and accordingly, the treatment plan was made. Various myofunctional appliances had been fabricated for the subjects having class 2 malocclusion and complete dentures had been fabricated for those who wanted to get their teeth replaced. Statistical analysis had been conducted using SPSS software.

Results: In this study, there were 100 subjects of which 50 had edentulism and belonged to group 1 and the remaining 50 had class 2 malocclusion and belonged to group 2. There were 23 males in group 1 and 27 females in group 2. There were 27 males in group 2 and 23 females in group 2. Edentulism was treated via complete denture prostheses and class 2 malocclusion was treated via different myofunctional appliances. Twin block appliance was given in 26 cases, Jasper jumper was given in 13 patients and Herbst appliance was given in 11 patients.

Conclusion: There was 50% prevalence of edentulism and there was 50% prevalence of class 2 malocclusion. Edentulism had been treated using complete denture prostheses while class 2 malocclusion had been treated using various myofunctional appliances such as Twin Block appliance, Herbst appliance and Jasper Jumper appliance.

INTRODUCTION

Edentulism is a debilitating and irreversible condition and is described as the “final marker of disease burden

for oral health”.¹ Although the prevalence of complete tooth loss has declined over the last decade, edentulism remains a major disease worldwide, especially among



older adults.² However, there are intra- and intercountry variations in the prevalence of complete edentulism³, and direct comparison between national samples is difficult because of the impact of various factors like education, economic circumstances, lifestyle, oral health knowledge and beliefs, and attitudes to dental care.⁴ In the United States, the number of edentate individuals is likely to stay stable at 9 million and, according to the most recent information, the prevalence of edentulism amongst adults over 60 years of age was 25%.⁵

There is a debate in the literature about the increasing and the decreasing rate of edentulism; Khazaei *et al.*⁶ concluded that the total rate of edentulism is believed to be on a steady decrease in developed countries, while in the developing countries, the reverse is seen. However, Douglass *et al.*⁷ demonstrated that edentulism continues to grow due to aging and the increasing numbers of the older adult. Gender has a tendency to be one of the important factors affecting the prevalence of edentulism.⁸ Numerous studies hypothesized that edentulism could be more prevalent in women than in men.^{8,9}

Recognition of occlusal malocclusion severity is important to determine the best treatment approach. The same malocclusion although with differing severity will be amenable to very different treatment protocols.^{10,11} A full cusp Class II malocclusion, for example, requires

more patient compliance in using removable orthodontic devices and more ability and experience of the orthodontist, than a ¼ cusp Class II malocclusion.¹² However, it is very unusual to find papers that clearly provide the occlusal discrepancy severity of the sample used. Additionally, the use of cephalometric variables is often more common than the occlusal parameters, although suggestion of including additional occlusal details has been made.¹³

This study was conducted to assess the prevalence of edentulism and class 2 malocclusion in a known population and their treatment with complete denture and myofunctional appliances, respectively.

MATERIAL AND METHODS

This study was conducted to assess the prevalence of edentulism and class 2 malocclusion in a known population and their treatment with complete denture and myofunctional appliances, respectively. There were 100 subjects. Oral clinical examination was carried out in these subjects. The prevalence of edentulism and class 2 malocclusion was estimated and accordingly, the treatment plan was made. Various myofunctional appliances had been fabricated for the subjects having class 2 malocclusion and complete dentures had been fabricated for those who wanted to get their teeth replaced. Statistical analysis had been conducted using SPSS software



Twin block appliance



Herbst appliance



Jasper Jumper appliance

RESULTS

Table 1: Group-wise distribution of subjects based on prevalence of condition.

Group	Number of cases	Percentage
Group 1 (Edentulism)	50	50
Group 2 (Class 2)	50	50

malocclusion)		
Total	100	100

In this study, there were 100 subjects of which 50 had edentulism and belonged to group 1 and the remaining 50 had class 2 malocclusion and belonged to group 2.

**Table 2: Gender-wise distribution of subjects.**

Gender	Number of subjects in Group 1	Number of subjects in Group 2
Male	23	27
Female	27	23
Total	50	50

There were 23 males in group 1 and 27 females in group 2. There were 27 males in group 2 and 23 females in group 2.

Table 3: Treatment of edentulism and class 2 malocclusion

Condition	Treatment
Edentulism	Complete denture
Class 2 malocclusion	Myofunctional appliances

Edentulism was treated via complete denture prostheses and class 2 malocclusion was treated via different myofunctional appliances.

Table 4: Treatment of class 2 malocclusion

Myofunctional appliance	Number of cases	Percentage
Twin block appliance	26	52
Jasper jumper	13	26
Herbst appliance	11	22
Total	50	100

Twin block appliance was given in 26 cases, Jasper jumper was given in 13 patients and Herbst appliance was given in 11 patients.

DISCUSSION

Following dental cavities and periodontal disorders, malocclusion is the third-most prevalent oral health issue.¹⁴ Skeletal class II malocclusions (SCIIIMO) account for over one-third of all malocclusions observed globally and are more common in Caucasians than in other races.¹⁵ Accordingly, in general dentistry practice, class II malocclusion patients make up about one-third of patients needing orthodontic treatment.¹⁶ This form of malocclusion is caused by a variety of causes.

Still, most research reports have linked it to mandibular deficiency (mandibular retrognathia is the leading

cause, rather than maxillary prognathism), necessitating the adoption of mandibular advancement appliances¹⁷⁻²⁰, which significantly impairs patients' ability to chew food effectively. Development modification, which involves suppressing maxillary growth and/or stimulating mandibular growth, can treat skeletal class II malocclusion in the preadolescent stage.²⁰

This study was conducted to assess the prevalence of edentulism and class 2 malocclusion in a known population and their treatment with complete denture and myofunctional appliances, respectively.

In this study, there were 100 subjects of which 50 had edentulism and belonged to group 1 and the remaining 50 had class 2 malocclusion and belonged to group 2. There were 23 males in group 1 and 27 females in group 2. There were 27 males in group 2 and 23 females in group 2. Edentulism was treated via complete denture prostheses and class 2 malocclusion was treated via different myofunctional appliances. Twin block appliance was given in 26 cases, Jasper jumper was given in 13 patients and Herbst appliance was given in 11 patients.

Balachandran P et al (2021)²¹ assessed the prevalence of malocclusion among 8–15 years old Indian children. The review protocol was registered in PROSPERO data with register number CRD42020214211. They employed the standard methodological procedures according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. Electronic search was done in PubMed database and other sources in 2020 to identify studies. Only studies published in English after January 1, 2000 that assessed prevalence of malocclusion using Dental Aesthetic Index (DAI) or Angle's classification of malocclusion were considered for screening. Selection of articles, data extraction and validity assessment were done independently by the two reviewers. Pooled prevalence of malocclusion is 35.40% (CI:35.37–35.43, 54 studies, 97959 participants). Males had higher proportion of malocclusion (36.20%, CI: 36.12–36.28, 33 studies, 40456 participants). 13 years had higher prevalence of malocclusion (33.50%, CI:33.34–33.66, 11 studies, 3366 participants). The prevalence of malocclusion was higher among urban population (32.78%, CI:32.71–32.85, 11 studies, 18313 participants). South India showed higher prevalence of malocclusion (39.58%, CI:39.54–39.62, 41 studies,



58645 participants). Prevalence of malocclusion as assessed by mean DAI score was 21.23 (CI:21.14–21.33,11 studies, 12345 participants).The pooled prevalence of malocclusion among 8–15 years children in India is 35.40% (CI:35.37–35.43,54 studies, 97959 participants).Included studies were heterogeneous in their methods of assessment of malocclusion.

Borg-Bartolo R et al (2022)²²analysed data collected from studies worldwide on the prevalence of edentulism and dental caries, in community-dwellers aged ≥ 45 years.Inclusion criteria; participants aged ≥ 45 years, community-dwellers. Exclusion criteria; participants aged < 45 years, in nursing homes, data obtained from dental clinics or pre-2005. The quality assessment tool by The National Heart, Lung and Blood Institute for Observational Cohort and Cross-sectional studies was used. Meta-analysis using the random-effects model (95% confidence interval) was done with data on participants who were edentulous and/or had active dental caries and stratified by regions of the world, age and Gross National Income per capita. Limitations in the data arose from several factors such as design of the studies included differences in socioeconomic status and access to health care among different countries.Eighty-six papers and seventeen NOHS were selected for data extraction. Majority of the studies (n = 69) were cross-sectional and of fair quality. 1.1%-70%, 4.9% - 98% prevalence of edentulism and dental caries, respectively. 22%, 45% estimated random-effects pooled prevalence of edentulism and dental caries, respectively.Within the limitations of this study, the findings indicate that untreated dental caries and tooth loss are prevalent on a global level with wide variations among different countries, age groups and socioeconomic status.

CONCLUSION

There was 50% prevalence of edentulism and there was 50% prevalence of class 2 malocclusion. Edentulism had been treated using complete denture prostheses while class 2 malocclusion had been treated using various myofunctional appliances such as Twin Block appliance, Herbst appliance and Jasper Jumper appliance.

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