

Evaluation of Extra Oral Facial Measurements for Denture Reconstruction

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Abstract

Background: The subject who wears a complete prosthesis for the first time desires its resemblance as of natural teeth. The aesthetic replacement of the edentulous subject amplifies the self-esteem and confidence of the subject. However; there is no universally accepted guideline for selecting the anterior teeth amongst the local population. The present study was conducted with the aim to evaluate the extra oral measurements amongst edentulous patients for denture reconstruction.

Materials and method: The present observational study was conducted in the department of Dentistry NSCB Medical College Jabalpur MP, patients who came to the department for regular check-ups. Different measurements related to the study were obtained. Each measurement was taken three times and the average value was calculated and taken in a predesigned proforma. Inter-canthal distance was measured as the distance between the inner canthus of eyes with patient in closed eyes, Interpupillary distance was taken from midpupil to midpupil with subjects made to look straight, Interalar width was obtained from external width of ala of the nose at relaxed position, Intercommissural width was obtained in relaxed state. All the data thus obtained was arranged in a tabulated form and analysed using SPSS software.

Results: There was a significant difference between the two as the p value was less than 0.05. The mean Interpupillary distance amongst males and females was 62.31 and 61.56 respectively. There was a significant difference between the two as the p value was less than 0.05.

Conclusion: The present study found significant difference in the facial measurements amongst the males and females.

Keywords: Denture; Edentulous; Extra oral

Introduction

The most expressive part of human body is the face that also determines a subject's social acceptance [1]. Teeth loss affects person's esthetics and also causes psychological trauma to the subject. Therefore, it is crucial that a pleasing and functionally contented replacement of the missing teeth is given [2]. The subject who wears a complete prosthesis for the first time desires its resemblance as of natural teeth. The esthetic replacement of the edentulous subject amplifies the self-esteem and confidence of the subject [3]. Records from the pre-extraction time guides the selection of tooth molds appropriately for each subject [4]. These records consist of diagnostic casts, photographs, x-rays, extracted teeth, etc. The absence of records of pre-extraction time leads to difficult selection of appropriate anterior teeth shape and size for edentulous patient [5]. Different anatomical measurements have been given, like intercanthal width, interpupillary distance, distance of outer-canthal, interalar distance, bizygomatic width, intracodylar distance, and philtrum to overcome situation like these. All factors can be used together as reference for determination of the width of the maxillary anterior teeth, although these measurements may vary with race and gender [6]. Different anatomic landmarks have fixed positional association with few natural teeth. These serve as important guidelines while replacing the natural teeth [7] However, there is no universally accepted guideline for selecting the anterior teeth amongst the local population. The present study was conducted with the aim to evaluate the extra oral measurements amongst edentulous patients for denture reconstruction.

Material and Methods

The present observational study was conducted in the department of Dentistry NSCB Medical College Jabalpur MP, patients who came

to the department for checkups. Based on the pilot study sample size was calculated. A total of 300 subjects were enrolled in the study. Only subjects with class I molar relationship, no missing teeth or periodontal pathology, no history of orthodontic checkup or no interdental spacing were enrolled in the study. Presence of dental irregularity, tooth structure loss or any other alteration in the dentition was excluded from the study. Subjects were divided into two groups-Groups I and Group II. All the subjects were informed about the study and a written consent was obtained from them in their vernacular language. The study was also approved by the institutional ethical board. Subjects were seated in a dental chair in upright position with head supported by the head rest, so that the occlusal plane of the maxillary teeth was parallel to the floor. Different measurements related to the study were obtained. Each measurement was taken three times and the average value was calculated and taken in a predesigned proforma. Inter-canthal distance was measured as the distance between the inner canthus of eyes with patient in closed eyes, Interpupillary distance was taken from midpupil to midpupil with subjects made to look straight, Inter alar width was obtained from external width of ala of the nose at relaxed position,

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Received March 30, 2021; **Accepted** September 23, 2021; **Published** September 30, 2021

Citation: Chokotiya H, Markam HS, Sharma D, Shrivastava S (2021) Evaluation of Extra Oral Facial Measurements for Denture Reconstruction. J Dent Sci Med 3: 129.

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Intercommissural width was obtained in relaxed state. All the data thus obtained was arranged in a tabulated form and analyzed using SPSS software. Student t test was used for analysis. Probability value of less than 0.05 was considered as significant.

Results

The study enrolled 300 subjects, with 150 males and 150 females with the mean age of 32.14± 4.22 years. The age range of the subjects was 27-36 years. The mean intercanthal distance amongst males and females was 31.67 and 30.21 respectively. There was a significant difference between the two as the p value was less than 0.05. The mean Interpupillary distance amongst males and females was 62.31 and 61.56 respectively. There was a significant difference between the two as the p value was less than 0.05. The mean Interalar distance amongst males and females was 34.87 and 34.58 respectively. There was no significant difference between the two as the p value was more than 0.05. The mean Intercommissural distance amongst males and females was 48.56 and 48.21 respectively. There was a significant difference between the two as the p value was less than 0.05. The mean Width of maxillary six anteriors amongst males and females was 50.11 and 49.23 respectively. There was a significant difference between the two as the p value was less than 0.05. (Table 1)

Discussion

As per the study by Hoffman et al., [8] he found that the combined width of the maxillary anterior teeth is equal to the interalar width multiplied by a factor of 1.31. This multiplication factor was 1.26 as per the study performed by Aleem Abdullah et al. [9]. According to the study by Latta et al. [10] amongst edentulous patients, he found that mean distance of 43.93 mm, with a range between 29.00 to 63.00 mm [11]. Mavroskoufis and Ritchie [12] in their study found that the joint width of maxillary anteriors and interalar width is always correlated. According to Gomes et al., [13] a ratio of 1:1.03 was found amongst Brazilian dentate patients. As per the study by Hoffman et al., [8] the interalar distance increased by 3% to obtain the combined width of maxillary anterior teeth. Comparable results were obtained studies conducted by Deogade et al. [14] and Mahesh et al. [4] The Differences always exist in the appearance between male and female teeth about length, width, and line angles. As per Gillen et al., [15] they found that the maxillary anteriors were wide and long amongst male when compared with females. In the present study, with 150 males and 150 females with the mean age of 32.14 ± 4.22 years, the age range of the subjects was 27-36 years. The mean intercanthal distance amongst males and females was 31.67 and 30.21 respectively. There was a significant difference between the two as the p value was less than 0.05. The mean Interpupillary distance amongst males and females was 62.31 and 61.56 respectively. There was a significant difference between the two as the p value was less than 0.05. The mean Interalar distance amongst males and females was 34.87 and 34.58 respectively. There was no significant difference between the two as the p value was more than 0.05. The mean Intercommissural distance amongst males and females was 48.56 and 48.21 respectively. There was a significant difference between the two as the p value was less than 0.05. The mean Width of

maxillary six anteriors amongst males and females was 50.11 and 49.23 respectively. There was a significant difference between the two as the p value was less than 0.05. Similar to this, Sterrett et al. [16] found that the mean width and length of the maxillary anteriors amongst males was significantly greater than amongst women of the white population. Also, the incisal angle was sharper in males and rounded amongst females. Therefore, these estimations may be used for determination of the width and position of the maxillary anteriors. Studies should be conducted in the future with large sample size to generalize these parameters for selecting and arranging maxillary anterior teeth and to provide "great smiles" with natural looking dentures.

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