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## ORIGINAL RESEARCH

### Assessment of Nutritional status of patients using conventional complete denture and implant supported overdenture: An observational study

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#### ABSTRACT

**Background:** Nutrition is an important determinant of health, including immune function, cognitive function and mortality in the older population. Edentulous individuals consume significantly lower amounts of protein and multiple other nutrients, including fiber, calcium, and some vitamins. Hence, the present study was undertaken for assessing nutritional status of patients using conventional complete denture and implant supported overdenture. **Materials & methods:** A total of 20 patients were enrolled in the present study. Only those patients were enrolled which were complete edentulous and which didn't had any history of previous prosthesis wearing. All the patients were divided broadly into two study groups as follows: Group A: Patients who received implant supported overdenture, and Group B: Patients who received conventional complete dentures. Six months after denture insertion, all the patients were recalled and venous blood from antecubital vein was taken from each patient and sent to laboratory for evaluation. Nutritional levels were assessed in all the patients. All the results were recorded in Microsoft excel sheet and were compared using SPSS software. **Results:** Mean haemoglobin levels among patients of group A and group B was 10.12 mg/dL and 9.85 mg/dL respectively. Mean RBC count among subjects of group A and group B was found to be  $3.93 \times 10^9$  and  $4.08 \times 10^9$  respectively. Mean serum ferritin levels among subjects of group A and Group B was found to be 143.2 g/L and 141.9 g/L respectively. No-significant results were obtained while comparing the nutritional status among subjects of group A and group B. **Conclusion:** Non-significant results exist while comparing nutritional status of patients wearing complete denture and patients with implant supported overdenture from past 10 year.

**Key words:** Nutritional status, Denture.

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#### INTRODUCTION

Nutrition is an important determinant of health, including immune function, cognitive function and mortality in the older population. The prevalence of malnutrition is increasing in this population, and a recent survey reported that as many as 46.2% of older adults were classified as at risk of malnutrition. The incidence of malnutrition is influenced by multiple biological, physiological and pathological factors, including dental status. Several observational studies have shown that intakes of nutritious foods, macronutrients and micronutrients, and nutritional

status were lower in those who were unable to fully masticate due to teeth loss, ill-fitting dentures or edentulousness.<sup>1-3</sup> Edentulous individuals consume significantly lower amounts of protein and multiple other nutrients, including fiber, calcium, and some vitamins, because they avoid a number of food types, particularly fresh fruit and raw vegetables and other hard and tough foods, when compared with dentate individuals. Several lines of evidence show a relationship between increased intake of some macronutrients and micronutrients and a reduced risk of certain illnesses. Most notably, there is strong

evidence that a diet high in fruit and vegetables protects against obesity, diabetes, cardiovascular disease, and some cancers.<sup>4-6</sup>Hence, under the light of above mentioned data, the present study was undertaken for assessing nutritional status of patients using conventional complete denture and implant supported overdenture.

## MATERIALS AND METHODS

The present study was undertaken for assessing nutritional status of patients using conventional complete denture and implant supported overdenture. A total of 20 patients were enrolled in the present study. Only those patients were enrolled which were complete edentulous and which didn't had any history of previous prosthesis wearing. All the patients were divided broadly into two study groups as follows:

Group A: Patients who received implant supported overdenture, and

Group B: Patients who received conventional complete dentures.

Six months after denture insertion, all the patients were recalled and venous blood from antecubital vein was taken from each patient and sent to laboratory for evaluation. Nutritional levels were assessed in all the patients. All the results were recorded in Microsoft excel sheet and were compared using SPSS software.

## RESULTS

In the present study, a total of 20 patients were enrolled. All the patients were broadly divided into two study groups: Group A and Group B. Mean haemoglobin levels among patients of group A and group B was 10.12 mg/dL and 9.85 mg/dL respectively. Mean RBC count among subjects of group A and group B was found to be  $3.93 \times 10^9$  and  $4.08 \times 10^9$  respectively. Mean serum ferritin levels among subjects of group A and Group B was found to be 143.2 g/L and 141.9 g/L respectively. No-significant results were obtained while comparing the nutritional status among subjects of group A and group B.

**Table 1:** Comparison of nutritional status between the two study groups

Variables	Group A	Group B	p-value
Haemoglobin status (mg/dL)	10.12	9.85	0.45
RBC count ( $\times 10^9$ )	3.93	4.08	0.69
WBC count ( $\times 10^3$ )	6.9	7.1	0.75
Cholesterol (mmol/L)	6.12	6.39	0.35
Ferritin (g/L)	143.2	141.9	0.11
Serum folate(nmol/L)	35.6	36.1	0.93

## DISCUSSION

Tooth loss is an age related problem. As the age advances, people's ability to maintain their teeth is affected due to their reduced physical capacity and income. Relationship between masticatory function and impaired food intake for fully edentulous patients has been described in literature. Masticatory ability and food selection are majorly affected by loss of teeth forcing elderly edentulous people to choose soft and easy to chew foodstuff when compared with dentate individuals. Edentulous individuals frequently report more chewing difficulties than dentate people, and they therefore constitute the group most likely to change their diet.<sup>6-9</sup>Hence, under the light of above mentioned data, the present study was undertaken for assessing nutritional status of patients using conventional complete denture and implant supported overdenture.

In the present study, a total of 20 patients were enrolled. All the patients were broadly divided into two study groups: Group A and Group B. Mean haemoglobin levels among patients of group A and group B was 10.12 mg/dL and 9.85 mg/dL respectively. Mean RBC count among subjects of group A and group B was found to be  $3.93 \times 10^9$  and  $4.08 \times 10^9$  respectively. Muller K et al evaluated the nutritional status of edentulous patients who randomly received either a mandibular conventional denture (CD) or an implant-supported overdenture (IP) 1 year previously. Weight, height, body composition and handgrip strength measurements were collected for analysis. Blood tests were performed to measure plasma parameters of diet intake. Participants responded to a Food Frequency Questionnaire and a Masticatory Function Questionnaire. Fifty-three people participated (58% men, 42% women; mean age = 53). Body composition indicators as well as plasma parameters were generally within normal range, and no statistically significant difference ( $p > 0.05$ ) was found between the groups. Patients in the CD group had significantly lower ratings for items regarding difficulty in chewing ( $p < 0.05$ ), but no significant difference was found for dietary intake ( $p > 0.05$ ). Although the CD wearers reported having more difficulty in chewing hard foods, both groups appeared to have a similar nutritional status.<sup>10</sup>

In the present study, mean serum ferritin levels among subjects of group A and Group B was found to be 143.2 g/L and 141.9 g/L respectively. No-significant results were obtained while comparing the nutritional status among subjects of group A and group B. Komagamine Yet al investigated the effect of a simultaneous combination of simple dietary advice delivered by dentists and provision of new complete dentures on dietary intake in edentulous individuals who request new dentures. Through a double-blinded, parallel, randomized controlled trial in which 70 edentulous persons who request new complete dentures will be enrolled, eligible study participants will be

randomly allocated to either a dietary intervention group receiving dietary advice or to a control group receiving only advice on the care and maintenance of dentures. Outcome measures include daily intake of nutrients and food items, assessed using a brief self-administered diet history questionnaire; antioxidant capacity, determined using blood and urine samples; nutritional status, assessed with the Mini-Nutritional Assessment-Short Form; oral health-related quality of life, assessed with the Japanese version of the Oral Health Impact Profile-EDENT and the Geriatric Oral Health Assessment Index; subjective chewing ability; masticatory performance, assessed using a color-changeable chewing gum and a gummy jelly; patient self-assessment of dentures; mild cognitive impairment, assessed with the Japanese version of the Montreal Cognitive Assessment; and functional capacity, assessed with the Japan Science and Technology Agency Index of Competence. Outcome measures, except for antioxidant capacity, are to be implemented at three time points: at baseline and at 3 and 6 months following intervention. Simple dietary advice that can be implemented by a dentist would be more practical in clinical practice than tailored dietary counseling.<sup>11</sup>

## CONCLUSION

From the above results, the authors concluded that non-significant results exists while comparing nutritional status of patients wearing complete denture and patients with implant supported overdenture from past 10 year.

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