A Clinical Survey on the Assessment of the Nutritional Status of Completely Edentulous Elderly Adults

Dr Priyanka Sutariya¹, Dr Shruti Mehta², Dr Chandrasinh Rajput³, Dr Hiren Rana⁴, Dr Pankti Shah⁵, Dr Yashpreetsingh Bhatia⁶

¹BDS, MDS, Professor, Department of Prosthodontics, College Of Dental Sciences and Research Centre, Gujarat University, Ahmedabad
²BDS, MDS, Professor and Head, Department of Prosthodontics, College Of Dental Sciences and Research Centre, Gujarat University, Ahmedabad
³BDS, MDS, Reader, Department of Prosthodontics, College Of Dental Sciences and Research Centre, Gujarat University, Ahmedabad
⁴BDS, MDS, Senior Lecturer, Department of Prosthodontics, College Of Dental Sciences and Research Centre, Gujarat University, Ahmedabad
⁵BDS, P G Student, Department of Periodontics, College Of Dental Sciences and Research Centre, Gujarat University, Ahmedabad
⁶BDS, MDS, Senior Lecturer, Department of Prosthodontics, College Of Dental Sciences and Research Centre, Gujarat University, Ahmedabad

Abstract: Background: The percentage of completely edentulous elderly adults is growing very fast and malnutrition is not uncommon in the elderly. Objectives: The present study was carried out to assess the nutritional status of the completely edentulous elderly adults using the Mini Nutritional Assessment (MNA) tool. Materials and Methodology: A total 40 completely edentulous elderly individuals above 65 years of age meeting the inclusion criteria were randomly selected for the study. The primary tool in this study was a predesigned Mini Nutritional Assessment form developed by Nestle. Score was as follows: Score <17: Malnourished; Score 17-23.5: At risk of malnutrition and Score>23.5: Well-nourished. Anthropometric measurements were done for height, weight, mid-upper arm circumference and calf circumference. Results: The results showed 57.5% of patients were at risk of malnutrition, 30% were well nourished and 12.5% were malnourished. Conclusion & Clinical Relevance: Dietary guidance based on nutritional assessment in the initial phases of examination and diagnosis should be considered while formulating a comprehensive prosthetic treatment plan for completely edentulous patients.

Keywords: Complete denture, Elderly adults, Nutrition

1. Introduction

There is a global rise in the aging population. The number of people in the world aged 60 and older is expected to grow past 2 billion by the year 2050. In a report by United Nations Population Fund, the population of elderly people in India will triple by 2050.[1] Geriatric health of this increased population of elderly adults is a global burden and we also need to introspect honestly, whether the increased life expectancy means better life or just more number of years of poor health!! Edentulism has significant impact on oral and general health of the patients including quality of life, nutrition and enjoyment of food.[2] Everyone has a part to play for the well being of the elderly, including the government, civil society, communities and families. Prosthodontics, which is a major branch of dentistry that deals with elderly population mainly for the fabrication of complete or removable partial denture can play an important role for the well being of elderly and reduce the global burden of geriatric health. Health of geriatric population depends on number of factors out of which nutrition play an important role.[3] Proper nutrition leads to healthy oral tissues and healthy oral tissues are necessary for successful complete denture treatment.[4,5]

The nutrition and health of the elderly is often neglected.[6] Most nutritional intervention programs are directed toward infants, children, young adolescent, pregnant and lactating mother. However, nutritional interventions could play a part in the prevention of degenerative conditions of the elderly and an improvement of their quality of life. A timely intervention can stop weight loss in those at risk of malnutrition.[7,8]

Unfortunately, not much importance and explanation has been given for the precise estimate of under-nutrition in this age group during complete denture treatment. An evaluation of nutritional status is important to formulate comprehensive treatment plan for successful complete denture prosthetic treatment and overall well being of patient. Along with this, it is also important to evaluate nutritional status of elderly adults for creation of a database to assist with the initiation of important programs and formulation of policies. The Mini nutritional assessment (MNA) tool is a well validated tool for assessing malnutrition in the elderly.[9] The tool was shown to have an accuracy of 92% when it was compared with a clinical evaluation by two physicians specialists in nutrition, and 98% when it was compared with a comprehensive nutritional assessment, including biochemical tests, anthropometric measurements and dietary...
assessment. The present study was carried out to assess the nutritional status of the elderly using the MNA tool.

2. Materials & Methodology

The study was carried out at College of Dental Sciences & Research Centre, Ahmedabad. 40 Completely edentulous elderly adults above 65 years of age, with or without dentures are included in the study. Those who were seriously ill, fed by tube and with known neuropsychiatric illness, were excluded from the study. Patients with known history of nutritional, systemic, or metabolic diseases are excluded in this study. Patients with addictions such as smoking, chewing tobacco, alcohol consumption were excluded. The primary tool in this study was a predesigned Mini Nutrition Assessment form developed by Nestle and is considered as a valid tool for the assessment of nutritional status. Score was done as follows: Score <17: Malnourished, Score 17-23.5: At risk of malnutrition and Score >23.5: Well nourished. Ethical clearance was taken from the institutional ethics committee. Informed consent was taken from the participants before commencing the study.

Table 1: Distribution of subjects as per MNA score and its association with anthropometric measurements

<table>
<thead>
<tr>
<th>MNA Score</th>
<th>Nutritional status</th>
<th>N</th>
<th>BMI Mean</th>
<th>SD</th>
<th>P-Value</th>
<th>CC Mean</th>
<th>SD</th>
<th>P-Value</th>
<th>MAC Mean</th>
<th>SD</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;23.5</td>
<td>Normal</td>
<td>12</td>
<td>28.94</td>
<td>5.76</td>
<td>&lt;0.001</td>
<td>57.13</td>
<td>4.27</td>
<td>&lt;0.001</td>
<td>27.42</td>
<td>5.61</td>
<td>0.021</td>
</tr>
<tr>
<td>17-23.5</td>
<td>At risk of malnutrition</td>
<td>23</td>
<td>23.61</td>
<td>3.46</td>
<td></td>
<td>31.76</td>
<td>5.28</td>
<td></td>
<td>24.22</td>
<td>3.94</td>
<td></td>
</tr>
<tr>
<td>&lt;17</td>
<td>Malnourished</td>
<td>5</td>
<td>18.57</td>
<td>1.31</td>
<td></td>
<td>28.00</td>
<td>2.12</td>
<td></td>
<td>20.9</td>
<td>2.46</td>
<td></td>
</tr>
</tbody>
</table>

All of the elderly in the present study went through the complete MNA irrespective of the MNA screening score. Anthropometric examination was done for height, weight, mid upper arm circumference and calf circumference. Weight and height were measured by using standardized weighing machine and stadiometer respectively. Weight was measured to the nearest 0.1 kg and height to the nearest 0.1 cm. For the elderly with spinal curvatures, arm length was used to estimate height.

3. Results

Data were collected from 40 subjects and tabulated using Microsoft Excel 2010. Statistical analysis was performed using SPSS (SPSS Statistics software v20; IBM Corp). Level of significance was set at α = 0.05. Appropriate statistical analysis - {Mean, Standard deviation, Analysis of Variance (ANOVA) with post-hoc tests were carried out to derive conclusions.

Table 2: Tukey’s Post-hoc test for Intergroup comparison

<table>
<thead>
<tr>
<th>Nutritional status Comparisons</th>
<th>Tukey HSD for BMI P-value</th>
<th>Tukey HSD for CC P-value</th>
<th>Tukey HSD for MAC P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal v/s at risk of malnutrition</td>
<td>0.002 Significant Difference</td>
<td>0.008 Significant Difference</td>
<td>0.115 No Significant Difference</td>
</tr>
<tr>
<td>Normal v/s malnourished</td>
<td>0.001 Significant Difference</td>
<td>0.002 Significant Difference</td>
<td>0.022 Significant Difference</td>
</tr>
<tr>
<td>At risk of malnutrition v/s malnourished</td>
<td>0.047 Significant Difference</td>
<td>0.255 No Significant Difference</td>
<td>0.288 No Significant Difference</td>
</tr>
</tbody>
</table>

Statistically significant difference is present for Body Mass Index (BMI) between all 3 groups. Statistically significant difference was found for Calf circumference (CC), when comparing normal group of patients with malnourished and at the risk of malnutrition but no significant difference was found when comparing malnourished patients with at the risk of malnutrition. For Mid upper Arm Circumference (MAC), no significant difference was found while comparing at the risk of malnutrition group with normal and malnourished group but significant difference was observed while comparing normal patients with malnourished group of patients.

4. Discussion

Older people are vulnerable to malnutrition for many reasons including physiological and functional changes that occur with age, lack of financial support and inadequate access to food. The functional status of the elderly is their ability to carry out their day to day activities including preparation of food and intake, thereby affecting nutritional status. In India, the problem of the health of the elderly is compounded by poor nutrition together with medical issues, including both communicable and non communicable diseases. Malnutrition and morbidity create a vicious cycle.

The overall prevalence of malnutrition was found to be 12.5%, but the alarming fact is that the proportion of elderly at risk of malnutrition was relatively very high57.5%. The findings of this study are similar to those of Rashmi Agarwalla et. al. [13] In their study done in rural TamilNadu, Vedantam et al [14] found that 14% of the elderly were malnourished. Ferdouset et. al. [15] also had similar results in their studies. However, the study conducted by Saeidlou et al. in a nursing home in Iran (2008) [15] observed that a considerably higher percentage (49.6%) of the elderly were malnourished. This could be due to the difference in profiling and characteristics of the study population.

Ettinger and Beck in 1984 had classified elderly group of patients into three categories according their functionality, functionally independent elderly, frail elderly and functionally dependent elderly. [16] The present study was....
carried out in sample of only 40 completely edentulous individuals in our institutional OPD only so other clusters should be included in this study. Further study needs to be carried out to identify other factors of nutritional risk in completely edentulous elderly adults.

5. Conclusion

To keep pace with recent findings, this study helps in diagnosis of complete denture patients who are at risk of malnutrition by using Mini Nutritional Assessment form. Thus, Dietary guidance based on nutritional assessment in the initial phases of examination and diagnosis should be considered while formulating a comprehensive prosthodontic treatment plan for complete denture patients.

References