ORIGINAL ARTICLE

Assessment of nutrition status in complete denture wearers, 09 months after insertion

Nazish Zafar, Ghazala Suleman, Azad Ali Azad, Zehra Iqtidar, Sajid Naeem

Received:
7th March, 2017

Accepted:
16th June, 2018

Abstract

Edentulism has an impact on nutritional status of the patient. It is important to rehabilitate the edentulous patient with complete denture along with dietary counseling and nutritional assessment on regular basis.

Objective: To assess nutritional status of an edentulous patient after 9 months of insertion of complete denture.

Material and Methods: This descriptive case series was conducted in the department of Prosthodontics, Armed Forces Institute of Dentistry (AFID) in a period of one year. Non-probability consecutive sampling technique was used to select 200 patients. Nutritional Status was assessed for edentulous patients after 9 months of insertion of complete denture using mini nutrition assessment form. The data was entered and analyzed on SPSS version 22.

Results: 67.5% of edentulous patients are at risk of malnutrition after 9 months of insertion of complete denture.

Conclusions: Dietary counseling and regular nutrional assessment is very important to avoid risk of malnutrition in complete denture wearers

Keywords: Nutritional status, complete denture, dietary counselling, mini nutrional assessment form

Armed Forces Institute of Dentistry, Rawalpindi
N Zafar
Z Iqtidar

King Khalid University Abha, KSA
G Suleman

Combined Military Hospital, Quetta
AA Azad

Lahore Medical and Dental College, Lahore
S Naeem

Correspondence:
Dr. Ghazala Suleman, Assistant Professor Prosthodontics, King Khalid University, Abha, KSA
Cell: (+92)313-4407308
Email: dr.ghazala@live.com

Introduction:

Molecular, cellular, physiologic and psychological changes occur with ageing. Of all the changes associated with aging, edendulism has a great impact on a person's quality of life. It cannot be denied that optimum oral health is essential for well-being of an individual. However, edentulism is still considered as a common public health problem worldwide, inspite of all the advancements in preventive dentistry.[1-3]

Tooth loss leads to a decrease in the intake of fruit, vegetables, fiber, and protein by the individuals, due to a decrease in the ability to chew.[1] This may eventually lead to certain nutritional deficiencies. Decreased intake of different components of diet has negative implications on individual's general health and thus increases the risk of malnutrition.[4]

Early detection of malnutrition is important to allow targeted nutritional intervention and should be a key component of the geriatric assessment. The Mini Nutrition Assessment Form is a simple, noninvasive, well-validated screening tool for malnutrition in elderly persons and is recommended for early detection of risk of malnutrition.[5,6]

Edentulism is associated with poor diet, compromised nutrition and also, lower level of subjective well-being.[7-9] Oral rehabilitation is one of the methods to replenish malnutrition so the purpose of this study was to assess nutritional

Table-1: Changes in food intake

Food intake	Frequency (n)	Percent(%)
Severe decrease	11	5.5
Moderate decrease	102	51
No decrease	87	43.5

Table-2: Weight loss over the last 3 months

Weight Loss	Frequency(n)	Percent(%)
Loss > 3 kg	6	03
Loss between 1 – 3 kg	22	11
No weight loss	122	61
Don't Know	50	25

Table-3: Mobility of study subjects

Mobility	Frequency(n)	Percent(%)
Goes out	200	100
Able to get out of bed only	-	-
Bed or chair bound	-	-

Table-4: Psychological stress or ailment in the last 3 months

Stress/Ailment	Frequency(n)	Percent(%)
Yes	29	14.5
No	171	85.5

Table-5: Neuro-psychological problems in study subjects

Neuro-psychological problems	Frequency (n)	Percent (%)
Severe dementia/depression	-	-
Mild dementia	25	12.5
No psychological problems	175	87.5

Table-6: Body Mass Index of study subjects

BMI	Frequency (n)	Percent (%)
Less than 19	14	7
19 to less than 21	60	30
21 to less than 23	93	46.5
23 or greater	33	16.5

Table-7: Total Screening score

Screening Score	Frequency (n)	Percent (%)
0-7	-	-
8-11	135	67.5
12-14	65	32.5

status of edentulous patients 9 months after insertion of complete denture.

Material and Methods:

This descriptive case series was conducted in the department of Prosthodontics, Armed Forces Institute of Dentistry (AFID), Rawalpindi in a period of one year (October 2015- September 2016). The sampling technique used was Non probability consecutive sampling 200 patients who were wearing complete denture for the first time were selected for the study after taking their informed consent. Ethical clearance was obtained prior to the study. Patients who were suffering from some form of illness at the time of study or cognitive impairment were excluded from the study. The patients were educated of the importance of a well-balanced diet and also the benefits of regular nutritional status assessment at the time of insertion of complete denture (CD). These patients were recalled 9 months after the delivery of CD and their nutritional status assessed using the screening part of Mini Nutrition Assessment (MNA) Form. This screening part consist of socio-demographic data and then weight, height, decline in food intake, weight loss, stress, mobility, neuropsychological problem, BMI and calf circumference were measured and score was obtained according to it.

SPSS software version 22 was used to analyze the data. Frequency and percentages were calculated. Patients were classified as normal nutrition status, at risk of malnutrition or malnourished according to screening score they obtained.

Screening Score:
12-14 points: Normal nutritional status
8-11 points: At risk of malnutrition
0-7 points: Malnourished

Results:

Assessment of the changes in food intake revealed a moderate decrease in food intake for 51% of the study subjects while 43.5% had no decrease in food intake (table 1). Only 3% subjects reported a weight loss of more than 3 kg in the last 3 months (table 2). All the subjects were mobile and reported no difficulty in going out. (table 3). Regarding psychological stress or ailment in the last 3 months, 85.5% gave a negative response (table 4). However, 12.5% had mild dementia (table 5). On calculation of BMI, majority (46.5%) lied in the "21 to less than 23" group (table 6). For the total screening score,

67.5% scored between 8-11 while 32.5% scored between 12-14 (table 7).

Discussion:

Mastication, dentition, and selection of nutrition by a person are closely related. Today, mostly people aged 65 or more are edentulous, thereby, reducing their capability of masticating. This, in turn, leads to a shift in the choice of nutrition they prefer to intake. The shift in nutrition intake also has a major effect on their health. Most prefer in taking meals with lesser fiber, carotene, vegetables, and meals which ease the process of mastication.[10-12] Wearing dentures have an impact on the oral as well as physical health of a person. Although chewing ability and oral health related quality of life is improved after insertion of complete denture[13] but in some cases denture wearers may have a significant oral disability and decreased chewing capability[14,15] resulting in decrease in intakes of nutrient-rich foods.[16,17]

The results of this study show that 67.5% of study sample scored between 8-11 which means greater number of denture wearers are at risk of malnutrition while 32.5% CD wearers scored between 12-14 and have normal nutrition status. Similar results were found in another study which showed a risk of malnutrition was found in 80% of subjects wearing complete denture and in 26% with normal dentition as well.[18] In another study 21.3% of edentulous group with complete denture were at risk of malnutrition than in the dentate group. This variability could be explained by dental status, by loneliness and by the GOHAI score (regression analysis).[19] An another study observed good nutritional health in 43.64% patients, moderate nutritional health in 47.72% patients and high nutritional risk in 19.09% patients one month after the placement of complete dentures.[20] Kamal Shigli and colleagues conducted a study and found 33.3% patients showed moderate nutritional health while 7.4% patients were at high nutritional risk.[21] The difference in results may be due to small sample size and evaluation of nutrional status after one month of complete denture provision. The study conducted by Prakash showed that edentulous patients without complete dentures had significantly lower MNA scores. Prosthetic rehabilitation of the edentulous patients with complete dentures, along with the dietary counselling, improved the nutritional status of these patients.[1]

In another study the risk of under fnourishment was 1.89 times more in edentulous person without denture than that of denture wearers.[22] Lamy showed edentulous subjects without dentures or with only one complete denture had significantly lower MNA scores than edentulous subjects with two complete dentures. Poor oral status seems also to put institutionalized subjects at higher risk of malnutrition.[23]

The limitation of this study is the lack of pretreatment nutrition status. This study cannot measure how many patients were at risk of malnutrition before treatment.

It is emphasized that every complete denture wearer needs to be periodically counseled by a registered dietician and dentist for checkup to avoid malnutrition and disease.[24]

Conclusion:

We conclude that the patient education and nutritional counselling is of paramount importance along with the provision of complete denture for the maintenance of good nutritional status and overall health of the patients.

Conflict of interest: None

Funding source: None

Role and contribution of authors

Dr Nazish Zafar, research idea, introduction, literature review, research objectives, data collection and manuscript.

Dr Ghazala Suleman, research objectives, introduction, literature review, materials and methods, data entry and manuscript

Dr Azad Ali Azad, materials and methods, data collection, data entry and manuscript

Dr Zehra Iqtidar, materials and methods, data entry and analysis and manuscript

Dr Sajid Naeem, materials and methods, data entry and analysis and manuscript

References:

1. Prakash N, Kalavathy N, Sridevi J, Premnath K. Nutritional status assessment in complete denture wearers. Gerodontology. 2012;29(3):224-30.
2. Sadiya S. Khan, Benjamin D. Singer, Douglas E. Vaughan. Molecular and physiological manifestations and measurement of aging in humans. Aging Cell. 2017;16(4):624–33.
3. Emami E, de Souza RF, Kabawat M, Feine JS. The impact of edentulism on oral and general health. Int J Dent. 2013;2013:498305.
4. Ruiz-López MD, Artacho R, Oliva P, Moreno-Torres R, Bolaños J, de Teresa C, López MC et al. Nutritional risk in institutionalized older women determined by the Mini Nutritional Assessment test: what are the main factors? Nutrition 2003 Sep;19(9):767-71.
5. Guigoz Y, Lauque S, Vellas BJ. Identifying the elderly at risk for malnutrition. The Mini Nutritional Assessment. Clin Ger. Med.2002 Nov;18(4):737-57.
6. Cohendy R, Rubenstein LZ, Eledjam JJ. The mini nutritional Assessment-Short Form for preoperative evaluation of elderly patients. Aging Clin. Exp.Res. 2001;13(4):293-97.
7. Hewlett SA, Yawson AE , Calys-Tagoe BN, Naidoo N, Martey P, Chatterji S, Kowal P et al, Mensah G et al, Minicuci N et el, Biritwum RB et al. Edentulism and quality of life among older Ghanaian adults. BMC Oral Health. 2015;9(15):48.
8. Lin YC, Chen JH, Lee HE, Yang NP, Chou TM. The association of chewing ability and diet in elderly complete denture patients. Int J Prosthodont. 2010;23(2):127-8.
9. Basnet BB, Limbu LK, Alhajj MN, Rokaya D . Relationship between prosthodontic treatment and nutritional status: a review. Birat J Health Sci. 2018;3(175):385-89.
10. Zarb GA, Bolender CL, Carlsson CE, editors. Boucher's Prosthodontic Treatment for Edentulous Patients. 11th ed. St. Louis: CV Mosby; 1997.
11. Atwood DA. Reduction of residual ridges: A major oral disease entity. J Prosthet Dent 1971;26:266-79.
12. Singh G, Quadri S, Kapoor B, Rathi S. Effect of nutrition in edentulous geriatric patients. J Oral Res Rev 2018;10:33-38.
13. Madhuri S, Hegde SS, Ravi S, Deepti A, Simpy M. Comparison of chewing ability, oral health related quality of life and nutritional status before and after insertion of complete denture amongst edentulous patients in a dental college of pune. Ethiop J Health Sci. 2014;24(3):253–60.
14. Komagamine Y, Kanazawa M, Iwak M, Ayami Jo, Suzuki H,Amagai N, Minakuchi S. Combined effect of new complete dentures and simple dietary advice on nutritional status in edentulous patients: study protocol for a randomized controlled trial. Trials. 2016; 17: 539. doi: 10.1186/s13063-016-1664-y
15. Goncalves TM, Vilanova LS, Gonçalves LM, Rodrigues Garcia RC. Effect of complete and partial removable dentures on chewing movements. J Oral Rehab. 2014;41(3):177-83.
16. Nowjack-Raymer RE, Sheiham A. Association of edentulism and diet and nutrition in US adults. J Dent Res. 2003;82:123–26.
17. Savoca MR, Arcury TA, Leng X, Chen H, Bell RA, Anderson AM, Kohrman T et al, Gilbert GH et al, Quandt SA et al. Impact of denture usage patterns on dietary quality and food avoidance among older adults. J Nutr Gerontol Geriatr. 2011;30(1):86-102.
18. Mbodj EB, Ngom PI, Seck MT, Aïdara AW, Ndiaye C, Dieng L, Touré SN et al, Faye D et al, Diallo PD et al. Relationships between masticatory performance and nutritional state in complete denture wearers. Odontostomatol Trop. 2008;31(122):20-6.
19. Cousson PY, Bessadet M, Nicolas E, Veyrune JL, Lesourd B, Lassauzay C. Nutritional status, dietary intake and oral quality of life in elderly complete denture wearers. Gerodontology. 2012;29(2):685-92.
20. Khan MW, Fatima A, Shah AA. Assessment of Nutritional Status One Month after Complete Denture Therapy. Pak J Med Health Sci.2016;10(3):894-97.
21. Shigli K, Hebbal M. Does prosthodontic rehabilitation change the eating patterns among completely edentulous patients? Gerodontology. 2012;29(1):48-53.
22. Han SY, Kim CS. Does denture-wearing status in edentulous South Korean elderly persons affect their nutritional intakes? Gerodontology. 2016 Jun;33(2):169-76.
23. Lamy M , Mojon P, Kalykakis G, Legrand R, Butz-Jorgensen E. Oral status and nutrition in the institutionalized elderly. J Dent. 1999;27(6):443-8.
24. Paturu R, Veeravalli PT, Vaidyanathan AK, Grover M. Evaluation of nutritional status and eating pattern in first and second-time denture wearers: a prospective 60 days (2 months) pilot study. J Indian Prosthodont Soc. 2011;11(3):156–64.