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Linking Oral Health-Related Quality Of Life To Nutritional Status In Edentulous Patients

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ABSTRACT

Tooth loss is a prevalent concern across age groups, with dentures commonly used to restore functionality and aesthetics. However, the influence of dentures on dietary habits and nutritional health remains debated. Oral health is crucial for overall well-being, impacting speech, confidence, digestion, and nutrient absorption. Teeth play a vital role in food breakdown through chewing, essential for proper digestion and nutrient absorption. While dentures aim to restore chewing function and facilitate a wider food variety intake, their effectiveness and impact on dietary habits remain uncertain.

This review synthesizes current research on dentures' influence on dietary intake, nutritional status, and eating enjoyment. Mixed findings suggest both improved nutritional intake and challenges such as limited food variety and increased malnutrition risk among denture wearers. Challenges in chewing efficiency, altered taste sensation, and social embarrassment further impact the eating experience.

Addressing these requires a multidisciplinary approach involving dental care, nutritional counselling, and psychological support. Strategies include consuming softer yet nutritious foods, regular dental check-ups, and education on denture care. Future research should focus on longitudinal studies and technological advancements in denture design to address these concerns, ultimately improving the quality of life for denture wearers.

Keywords: Dentures, Dietary Intake, Nutritional Status, Oral Health, Quality of Life, Eating Experience, Malnutrition,

INTRODUCTION

Tooth loss is a prevalent issue affecting individuals across various age groups. Dentures serve as a common replacement therapy, aiming to restore functionality and aesthetics lost due to missing teeth.[1] While dentures offer a solution, their impact on how we eat, what we eat, and our overall nutritional health remains a topic of ongoing investigation. Maintaining good oral health is crucial for overall well-being. It not only impacts our ability to speak clearly and smile with confidence but also plays a vital role in digestion and nutrient absorption.[2] Our teeth are instrumental in the initial breakdown of food particles through chewing. This process is essential for proper food digestion and the efficient absorption of nutrients by the body.[3] The absence of teeth, whether partial or complete, presents significant challenges to the proper breakdown of food. This can lead to digestive issues and difficulty absorbing essential nutrients from our diet. Dentures are introduced to address these challenges by restoring chewing function and allowing individuals to consume a wider variety of foods.[4] However, the effectiveness of dentures in

replicating the natural chewing process and their overall impact on dietary habits and nutritional health remain subjects of debate.[5] This review aims to provide a comprehensive overview of the current research on the impact of dentures on dietary intake,

nutritional status, and the enjoyment of eating. Specifically, it aims to explore the association between oral health-related quality of life and nutritional status among edentulous patients.

REVIEW OF LITERATURE

A study by N, Nurjanah found no notable connection between using dentures and maintaining nutritional well-being among the elderly. However, it's generally advised for older individuals to enhance their dietary intake to sustain good nutritional status.[6] Conversely, research by Hapsari and Sulistya suggests that individuals using dentures tend to have better nutritional statuses in comparison to those who don't.[7] This might be attributed to how dentures impact chewing efficiency and overall food consumption among the elderly, as indicated in Grace and Gomez's study. Additionally, dental prosthetics should incorporate dietary guidance to ensure optimal protein intake, as recommended by Grace and Gomez's findings.[8] According to Liliana's study, wearing dentures is linked to enhanced nutritional intake and status among elderly individuals, with noticeable improvements observed after using dentures.[9] However, Hassan and Faleeh's research suggests that dentures can hinder eating function and enjoyment, consequently impacting dietary intake. Additionally, patients often lack guidance regarding realistic expectations and may question the credibility of dentists in this regard.[10] Paula and Moynihan's study suggests that individuals wearing dentures might consume fewer fruits, vegetables, and protein.[3] Simply providing dentures doesn't necessarily lead to an improvement in the quality of one's diet. Similarly, according to Syed, Hamid, and Habib's research, while complete dentures can enhance oral health, they don't necessarily affect caloric intake or body mass index (BMI).[11] There's no significant enhancement in dietary intake when comparing dentures to natural teeth, as highlighted by Rajlakshmi and Banerjee.[12] Elderly denture wearers face a substantial risk of malnutrition, with approximately 70% being vulnerable. Dentures can impair the ability to eat and chew properly, as noted by Meenakshi, Srinivasa, and Iyer.[13] They emphasize the importance of dietary counseling to mitigate complications associated with malnutrition among denture wearers. According to Leena and Jauhiainen's findings, individuals with full dentures tend to consume fewer vegetables and fruits while consuming more sugary products.[14] Bishal, Babu, and Basnet's research indicates that denture wearers generally have lower intake levels of specific nutrients.[15] However, prosthodontic treatment could potentially enhance the nutritional status of edentulous patients, as suggested by their study. Ashika and Agrawal highlight that denture wearers might experience compromised nutritional health due to various factors.[16] Tooth loss and wearing dentures could lead to decreased dietary adequacy among the elderly, as supported by their research. Pierre, Yves, and Cousson's research indicates that complete denture wearers face a heightened risk of malnutrition.[17] They also found that denture wearers tend to have lower energy and vitamin intake compared to individuals with natural teeth. According to Nur, Huda, and Alimin, denture wearers often have a restricted variety of foods in their diet, which raises the risk of nutritional deficiencies. Additionally, they highlight that the risk of nutritional emergencies increases with age among individuals who wear dentures.[18]

NUTRITIONAL STATUS IN DENTURE WEARERS

In patients with complete tooth loss, prosthetic therapy through dentures not only restores functionality and aesthetics but also significantly boosts confidence. However, the success and longevity of dentures are highly dependent on the health of the oral mucosa. Any changes in the mucosa can lead to poorly fitting dentures, resulting in treatment failure. Mucosal health is closely linked to dietary habits, and edentulous individuals often consume lower amounts of essential nutrients, including proteins, fibres, carbohydrates, and certain vitamins, as they tend to avoid fresh fruits and uncooked vegetables.

The physiological changes associated with aging further complicate the nutritional status of these individuals. Decreased muscular forces and reduced saliva production prolong mastication and hamper the formation of a cohesive bolus for swallowing. Aging also leads to impaired kidney function, resulting in dehydration and increasing the risk of conditions like hyponatremia and hypoglycaemia. Moreover, many elderly individuals are on medications that can cause anorexia, nausea, gastrointestinal disturbances, and interfere with nutrient absorption and utilization. These factors collectively impact the dietary intake and nutritional status of denture wearers.[19] Understanding these factors is crucial for prosthodontists to provide appropriate guidance and support.

By incorporating dietary analysis and counselling into the treatment plan, prosthodontists can help maintain mucosal health, improve tolerance to new dentures, and prevent their rejection. This approach is particularly beneficial as dietary adjustments and nutritional support can be seamlessly integrated during the multiple appointments required for denture fabrication. Thus, addressing these nutritional and physiological factors is essential for improving the overall health and quality of life of elderly denture wearers.[20]

THE INFLUENCE OF ORAL HEALTH ON NUTRITION IN DENTURE WEARERS

Figure 1: INFLUENCE OF ORAL HEALTH ON NUTRITION IN DENTURE WEARERS

Source: https://www.dentistry33.com/clinical-cases/prosthodontics/428/implant- supported-prostheses-impact-on-nutritional-status-and-oral-health-in-edentulous- patients.html

Oral health status significantly influences nutrition, with the condition of the mouth and teeth having the potential to adversely affect dietary intake. Studies indicate that one in five older adults report that their oral condition prevents them from eating their preferred foods. Additionally, 15% of older adults take longer to complete their meals and find their enjoyment of food limited by oral health issues, while 5% avoid certain foods altogether due to chewing problems . Although the increase in health risks due to tooth loss may be minimal on an individual level, the implications can be substantial given the large number of affected individuals.[21] Risk factors for malnutrition in denture wearers include loose dentures, sore spots beneath the dentures, significantly resorbed mandibles, difficulty chewing, reduced food intake, inability to prepare food independently, unexpected weight changes, alcohol or drug abuse, and undergoing chemotherapy or radiation therapy.

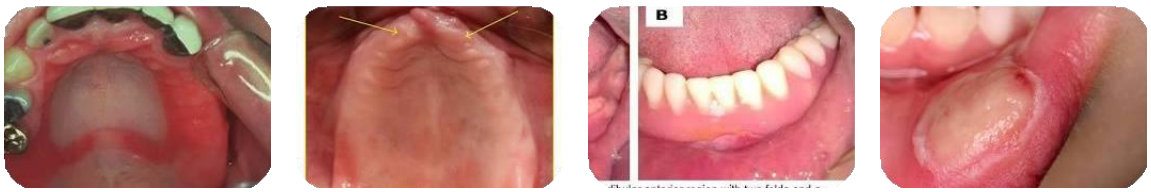

Figure 2: The consequences of complete denture

The consequences of complete denture treatment can negatively impact the health of both oral and denture-supporting tissues. Direct sequelae include conditions such as denture stomatitis, denture irritation, hyperplasia, traumatic ulcers, flabby ridges, residual ridge resorption, mucosal ulcerations, altered taste perception, burning mouth syndrome, and gagging . Indirect sequelae relate to reduced chewing ability, leading to an overall decline in functional capacity and general health. An inadequate diet can further decrease tissue tolerance to normal wear and tear, which in turn can result in poor adaptation to dentures and reduced resistance to oral health issues.

For instance, denture stomatitis, an inflammation of the oral mucosa beneath the denture, can cause discomfort and lead to dietary modifications that might compromise nutritional intake. Similarly, conditions like residual ridge resorption and flabby ridges can affect the fit and stability of dentures, making chewing difficult and painful, which further impacts dietary choices and nutrition .

Moreover, burning mouth syndrome and altered taste perception can diminish the pleasure of eating, leading to decreased food intake and potential nutritional deficiencies . Addressing these issues requires a comprehensive approach that includes regular dental check-ups, proper denture care, and nutritional counselling to ensure that denture wearers maintain a balanced diet.

Changes in eating habits due to denture-related difficulties could influence weight. If individuals struggle to eat a balanced diet, they might experience weight loss or gain. Complete dentures can significantly impact an individual's body built and overall health by altering facial aesthetics, jawbone structure, and chewing efficiency. They may lead to dietary restrictions, speech difficulties, and psychological effects on self-esteem. Additionally, improper fit can cause jaw misalignment and discomfort, while neglecting oral hygiene can result in infections.

Regular dental care and adjustments are essential to minimize negative consequences and ensure optimal function. Wearing dentures can notably shorten the locus of the centre of mass, while also enhancing gait velocity and the harmonic ratio of the vertical angle rate. Additionally, complete dentures influence the stability of edentulous patients in both static and dynamic situations.[18,21]

Health professionals should be vigilant in assessing the nutritional status of denture wearers, incorporating tools like the Mini Nutritional Assessment to monitor weight changes, dietary patterns, and eating difficulties. By doing so, they can provide necessary dietary care and make referrals to nutritionists when appropriate, ensuring that denture wearers receive the support needed to maintain their oral health and overall well-being.[22]

EATING EXPERIENCE AND QUALITY OF LIFE FOR DENTURE WEARERS

Denture wearers often face significant challenges in chewing efficiency and comfort. These difficulties stem from the inherent differences between natural teeth and dentures, which can lead to discomfort and pain during chewing. The adaptation period for new denture wearers can be particularly challenging as they adjust to the feel and function of the prostheses. Over time, even long-term denture wearers may continue to experience issues such as loose-fitting dentures and sore spots, which can exacerbate discomfort and hinder effective chewing. Wearing dentures can also lead to alterations in taste sensation, which significantly impacts food preferences and overall dietary satisfaction. Studies indicate that denture wearers often report changes in their ability to taste and enjoy food, which can lead to a reduced desire to eat certain foods and potentially impact their nutritional intake.

These sensory changes are often due to the coverage of taste buds on the roof of the mouth by the dentures and the reduced ability to detect subtle flavours. The psychological and social aspects of wearing dentures can also affect the eating experience. Many denture wearers feel embarrassed or self-conscious about their dentures, particularly in social settings. This embarrassment can lead to avoidance of social eating situations, which can further impact their overall quality of life. The fear of dentures slipping or making noise while eating can also contribute to this self-consciousness.

The cumulative effect of these issues—chewing difficulties, altered taste, and social embarrassment—can significantly impact the quality of life and mental health of denture wearers. The discomfort and dietary limitations imposed by dentures can lead to frustration and a diminished enjoyment of food, which are important aspects of daily life. Additionally, the social withdrawal resulting from embarrassment can contribute to feelings of isolation and depression. Addressing these challenges requires comprehensive care that includes not only dental adjustments and nutritional support but also psychological counselling to help denture wearers adapt and maintain a positive quality of life.[23]

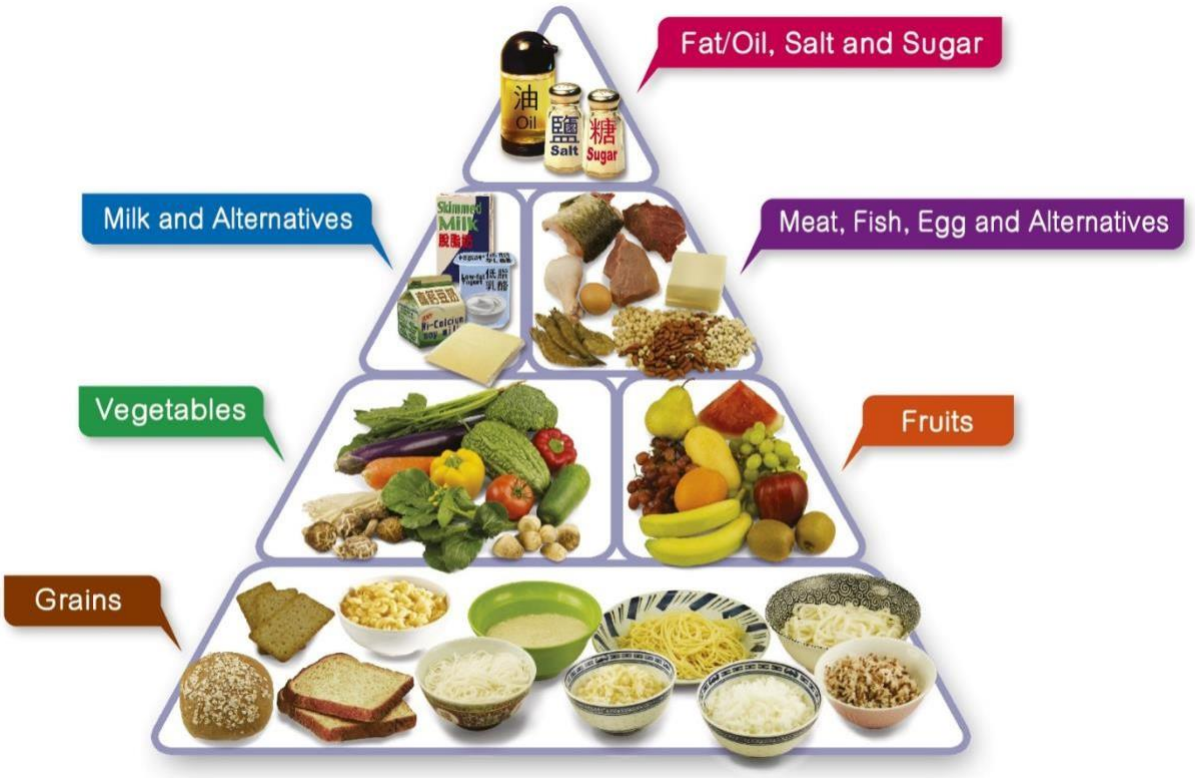

Figure 3: Food Pyramid

DIETARY RECOMMENDATIONS FOR NEW DENTURE WEARERS

For new denture wearers, the typical process of eating, which includes ingestion, mastication, and swallowing, becomes more challenging. Initially, new denture wearers often find it easier

to swallow food without much chewing, making a liquid diet necessary during the first days post-insertion. This helps them adjust to the new prosthesis without causing discomfort. On the first post-insertion day, the recommended diet includes fruit and vegetable juices, which provide essential nutrients and have a soothing effect on the oral cavity.

Softened bread or cereals mixed to a liquid consistency can maintain protein intake, while fluid milk, rich in calcium, can prevent osteoporosis, especially important for the elderly who are prone to muscle loss and bone resorption. Meat can be consumed in puree form or as broths and soups, which are easier to swallow. On the second and third days post- insertion, the diet can be expanded to include seedless and peeled vegetables, semi-solid fruits, cooked cereals, rice porridge, soft noodles, and bread crumbs mixed with milk. The milk group should still include fluid milk and melted cottage cheese.

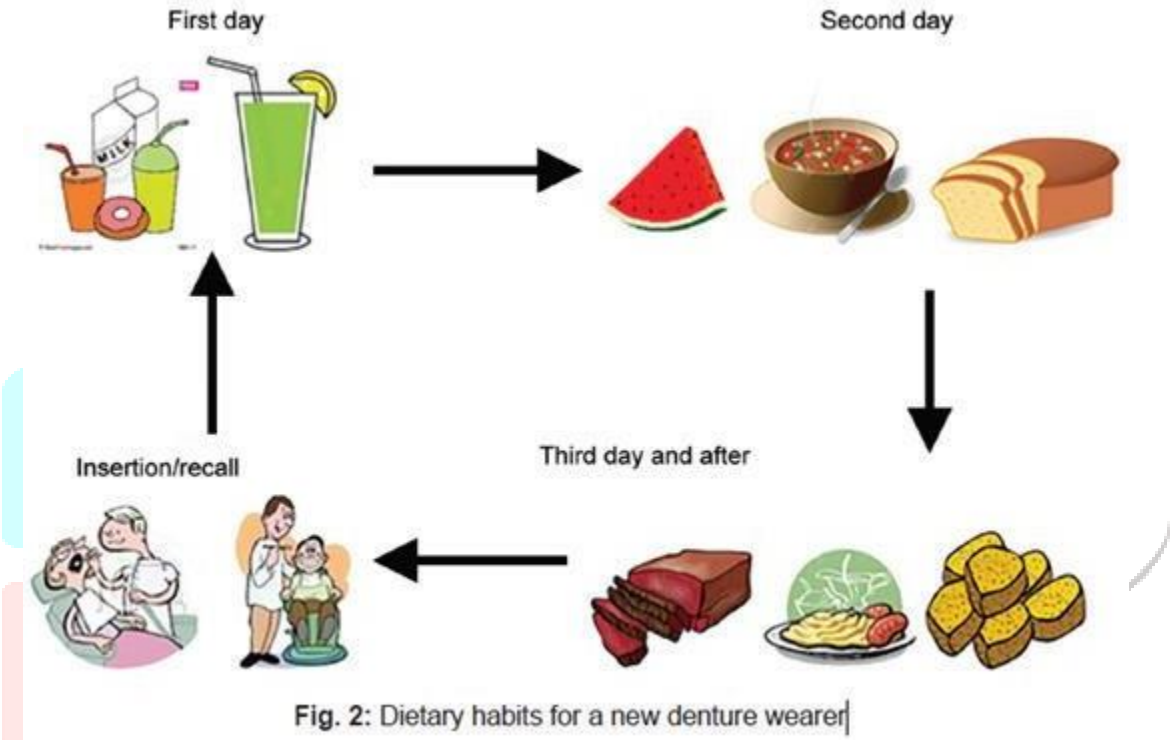

Fig. 2: Dietary habits for a new denture wearer

Figure 4: Instructions

The meat group can include tenderly cooked chicken, finely cut beef, thick broths or soups, and fish liver with thick cream. It's important for the diet to include at least two dairy products, such as milk and cheese, to ensure adequate calcium intake. By the fourth day and onwards, as the oral cavity adjusts and any sore spots heal, the patient can transition to a solid diet. Food should be cut into smaller pieces to prevent gagging or choking until the patient is fully accustomed to the dentures.

Proper denture hygiene is crucial to avoid sore spots and other complications. Recommendations for healthcare providers include incorporating nutritional assessments into routine case histories, using tools like the mini nutritional assessment to monitor weight changes, dietary patterns, and eating difficulties. Consistent dietary care and referrals to nutritionists are advised. Regular recall visits for oral health assessments should be mandatory for adults with full dentures to address any chewing difficulties or discomfort, and to make necessary adjustments to the dentures to prevent mucosal abrasions and edema.[24]

STRATEGIES TO IMPROVE QUALITY OF LIFE FOR DENTURE WEARERS

To help maintain a balanced diet, denture wearers should be encouraged to consume softer yet nutritious foods. These can be easier to chew and digest, reducing the risk of discomfort and improving overall dietary intake. Examples of such foods include stews, smoothies, and well-cooked vegetables.

Stews provide a combination of protein and vegetables in a soft, easy-to-eat form, while smoothies can be packed with fruits, vegetables, and even protein supplements to ensure comprehensive nutrition.

Well-cooked vegetables retain their nutritional value while being soft enough to chew comfortably.[25] Regular dental check-ups are crucial for ensuring that dentures fit well and are properly maintained. Ill-fitting dentures can cause sore spots and reduce chewing efficiency, making it difficult for wearers to consume a variety of foods. By having regular dental appointments, adjustments can be made to the dentures to enhance their fit and comfort. This can significantly reduce discomfort and improve the overall eating experience. Guidance from a nutritionist can be invaluable for denture wearers.

A nutritionist can help individuals make healthier food choices that accommodate their chewing limitations while ensuring they receive all necessary nutrients. Nutritional counselling can include personalized meal plans that focus on nutrient-dense, easy-to-eat foods and strategies for incorporating a variety of food groups into the diet. This support can help prevent malnutrition and promote better overall health. Providing education on denture care and management can significantly improve the overall eating experience for denture wearers.

Education programs can teach individuals how to properly clean and maintain their dentures, what to expect during the adjustment period, and tips for dealing with common issues such as sore spots or difficulties in chewing. Additionally, support groups or resources can offer emotional and practical support, helping denture wearers to feel more confident and less isolated in their experiences.[26]

CONCLUSION

While dentures play a crucial role in addressing the challenges of tooth loss, they also bring significant changes to dietary intake and nutritional status. Addressing these issues through appropriate dietary adjustments, regular dental check-ups, and nutritional counselling can help improve the quality of life for denture wearers. Future research should focus on identifying gaps in current studies, conducting longitudinal studies to assess long-term impacts, and exploring technological advancements in denture design to better replicate natural chewing functions.

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