Assessing Patient Satisfaction and Oral Health in Relation to Prosthetic Type and Associated Maintenance Challenges: A Comparative Study

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Abstract

The use of prosthetic devices for tooth replacement is a critical aspect of restorative dentistry aimed at improving function, aesthetics, and quality of life for patients with partial or total edentulism. Fixed and removable prosthetic devices represent two distinct treatment modalities, each with its own advantages and challenges. This review provides a comparative analysis of fixed versus removable prosthetic devices by evaluating patient satisfaction, oral health outcomes, functional performance, and long-term maintenance. Current evidence suggests that fixed prostheses generally offer better patient satisfaction and enhanced function, but they may require more complex maintenance. Removable prostheses are more cost-effective and versatile but can pose challenges in terms of comfort, retention, and long-term satisfaction. However, patients' expectations regarding prosthetic treatments vary significantly, influencing their overall satisfaction. Some prioritize restoring chewing function, while others focus on aesthetic improvements. Therefore, it is crucial for clinicians to understand and address these expectations during initial consultations, clarifying any misconceptions or unrealistic hopes patients may have. By examining the factors that contribute to or detract from satisfaction, this review will provide a comprehensive understanding of patient experiences, the challenges they face, and the ways in which healthcare providers can improve outcomes. Through an analysis of studies focused on clinical outcomes, patient-reported experiences, and advancements in prosthetic materials and design, the review will identify key trends and suggest avenues for future research and practice improvements.

Keywords: oral health, prostheses.

1. Introduction

Tooth loss is a significant public health issue that affects millions of people worldwide. It can result from various factors, including poor oral hygiene, dental caries, periodontal disease, trauma, and systemic conditions like diabetes. These causes often reflect a complex interaction

between biological, behavioral, and socio-economic factors. The loss of teeth, whether partial or complete, can severely affect a person's oral health, aesthetics, and overall quality of life. According to the World Health Organization (WHO), oral diseases, including those leading to tooth loss, rank among the most prevalent non-communicable diseases globally, affecting nearly 3.5 billion people as (WHO, 2022). The prevalence of tooth loss varies significantly across different regions and populations, often influenced by factors such as age, access to dental care, socio-economic status, and lifestyle habits (Peres et al., 2019). In developed countries, the incidence of tooth loss has decreased due to improvements in oral health education, preventive care, and access to advanced dental treatments (Aida et al., 2022). However, in low- and middle-income countries, the burden remains high due to limited access to dental care and a lack of preventive measures (Nurelhuda et al., 2021).

Prosthetic rehabilitation using fixed or removable devices provides an effective solution to restore functionality and appearance. These treatments not only restore function and aesthetics but also improve the quality of life for affected individuals (Duong et al., 2022). Prosthetic dentistry focuses on replacing damaged teeth with artificial substitutes through biomechanical and surgical methods to restore oral structures. It consists of four key areas: maxillofacial prosthetics, removable prosthodontics, fixed prosthodontics, and implant prosthodontics. Treatment for tooth loss has evolved significantly in recent decades, ranging from traditional prosthetics such as dentures and bridges to more advanced options like dental implants and tissue regeneration techniques. The term "dental prosthesis" refers to devices that are designed to minimize negative consequences while restoring chewing, cosmetic, and phonetic capabilities. Two primary options are available for dental rehabilitation: fixed prosthetics, such as bridges and implants, and removable prosthetics, including complete and partial dentures. Dental implants, made from synthetic materials, are placed in oral tissues to provide support for prosthetic devices. Implant production has grown globally over the past 30 years, with over 800,000 implants placed annually in the U.S. and more than 1.8 million in the European Union (Alwohaibi et al., 2023). The choice between fixed prosthetic devices and removable prosthetic devices depends on multiple factors. Both approaches have their distinct advantages and limitations, and their choice depends on various factors such as the patient's oral condition, patient preferences, clinical indications, financial constraints, and maintenance needs.

This literature review aims to conduct a comparative analysis of fixed versus removable dental prosthetics, focusing on patient satisfaction (which includes comfort, aesthetics, and quality of life), oral health outcomes (particularly in relation to periodontal health, bone preservation, and soft tissue response), and the long-term maintenance associated with each type of device (including complications, adjustments, and durability). By exploring existing research, the review seeks to provide a comprehensive understanding of the clinical outcomes and patient experiences related to these two treatment options.

2. Fixed Prosthetic Devices

Fixed prostheses, also known as fixed dental restorations, are appliances used to restore damaged or missing teeth. They are permanently cemented or bonded to natural teeth, dental implants, or

roots, providing long-term solutions for improving function, aesthetics, and oral health. Fixed prosthetics, particularly dental implants, have become increasingly popular due to their stability, comfort, and long-term functionality. Numerous studies highlight that fixed devices can provide better chewing efficiency and speech improvements compared to removable dentures. Additionally, fixed prosthetics are often associated with higher levels of patient satisfaction, as they more closely mimic the function and aesthetics of natural teeth (Shrestha et al., 2020). However, the cost of fixed prosthetics, especially implants, can be a barrier to access, and their installation requires sufficient bone support, which may not be available in all patients without bone grafting (Esposito et al., 2009; Kumar et al., 2021). There are six main types of fixed prostheses including; 1- implant-supported fixed dentures 2- fixed implant bridges 3- full-arch zirconia bridges 4- fixed ceramic dentures 5- permanent fixed dentures with bar attachment "overdentures" 6- fixed full-arch acrylic dentures.

Implant-supported fixed dentures are prosthetic teeth permanently attached to dental implants. These implants serve as artificial tooth roots, providing a stable foundation for the denture. This type of denture offers excellent durability, stability, and comfort. There are several subtypes based on the number of implants used; All-on-4 Dentures: four dental implants are strategically placed in the jaw, and a full-arch prosthetic is fixed onto the implants. It also minimizes the need for bone grafting as the implants are angled to maximize bone contact. It is suitable for patients with full arch tooth loss, especially those with moderate bone loss (Maló et al., 2019). All-on-6 or All-on-8 dentures: Similar to the All-on-4 concept but with six or eight implants providing even more stability. These options are used when a patient has sufficient bone to support additional implants. It is suitable for patients who have a denser and more robust jawbone, allowing for the placement of additional implants (Sirikrai, 2021). Hybrid fixed dentures: It also known as fixed-detachable dentures, combine the characteristics of a denture and a bridge and are screwed into dental implants. It is suitable for edentulous patients (those with no natural teeth remaining) who want the permanence of a fixed denture with the flexibility of occasional removal for maintenance (Salama, 2023; Wda_Eugene, 2023).

A fixed implant bridge is a dental prosthesis that replaces multiple teeth in a row. The bridge is anchored to two or more dental implants, depending on the number of missing teeth. Similar to a traditional dental bridge but supported by implants rather than adjacent natural teeth. It is commonly used when several teeth in one area are missing. It characterized by restoring both function and appearance, providing a permanent solution to multiple missing teeth without affecting neighboring teeth. It is suitable for patients missing multiple teeth in a row who have adequate bone to support implants (Bon, 2023).

Full-arch zirconia bridges are advanced, high-end fixed dentures designed to replace a full set of teeth using dental implants for support. These bridges are made entirely of zirconia, a highly durable and aesthetically pleasing material. Zirconia offers the look and feel of natural teeth, along with superior strength. Zirconia is incredibly strong, resistant to chipping and fractures, and provides a highly natural appearance. It's a top choice for long-term durability. It is suitable for patients seeking the most durable and aesthetic option for full-arch replacement who can afford a premium prosthetic (Cinquini et al., 2023).

Fixed ceramic dentures use ceramic materials to mimic the appearance of natural teeth. They are usually supported by implants and can replace either partial or full arches of teeth. Ceramic is well-known for its natural appearance and ability to blend with natural teeth. Fixed ceramic dentures are custom-made and bonded to implants. Aesthetically pleasing, especially for front teeth, and highly durable. Ceramic is also stain-resistant, making it a great long-term option. It is suitable for patients prioritizing aesthetics, especially for restoring front teeth (Madfa and Yue, 2016; Elosta, 2023).

A bar-retained overdenture is a type of fixed denture that attaches to a metal bar secured by dental implants. The denture itself is removable, but the bar remains fixed. A thin metal bar is fixed to dental implants, and the denture clips onto the bar. Although the denture can be removed for cleaning, it provides a secure fit during use. It characterized by enhanced stability and retention compared to traditional removable dentures, while still allowing some flexibility in terms of removal. It is suitable for patients who want the security of fixed dentures but prefer to be able to remove the prosthesis for cleaning (Dave Johnson Dental Lab, Inc, 2023; Lori, 2024).

Fixed full-arch acrylic dentures consist of an acrylic base with artificial teeth attached. The denture is then screwed into implants. This is a more cost-effective alternative to zirconia or porcelain fixed dentures, as acrylic materials are less expensive. It characterized by less expensive than zirconia or ceramic options while still providing fixed stability. Often used as a temporary fixed prosthesis after implant surgery. It is suitable for patients seeking a more affordable fixed denture solution or those who need a temporary option before transitioning to a more permanent material (Barootchi et al., 2020).

3. Removable Prosthetic Devices

The history of removable prosthetic devices dates back thousands of years. Ancient civilizations like the Egyptians and Etruscans crafted rudimentary dental appliances from materials like animal teeth, gold, and bone. The first known dentures were created as early as 700 B.C., using human or animal teeth bound together with metal (Becker and Turfa, 2017). In the 18th century, the development of porcelain dentures marked a significant advancement in the field (Ruiz, 2024). By the 19th century, vulcanized rubber became the standard material for denture bases, making them more accessible and comfortable (Stephens, 2023). Today, advanced materials like acrylic resins, metal alloys, and dental implants are used, ensuring better functionality and aesthetics. Removable prosthetic devices consist of various types, including complete dentures, which are used for edentulous patients, these prostheses replace all the teeth in one or both arches. Partial dentures, designed to replace some missing teeth, are typically secured by clasps or attachments to the remaining natural teeth. Additionally, implant-supported overdentures are removable prostheses that connect to dental implants, providing extra stability while allowing the patient to remove them for cleaning. A dentist may suggest an RPD as a temporary dental solution, though it is not a common choice. Other options, such as dental implants or a permanent bridge, are typically more effective for replacing missing teeth and offer better long-term oral health advantages. In many cases, patients use an RPD while waiting for a more permanent dental solution (Jdand, 2022).

The Kennedy Classification System is an essential framework in dentistry for categorizing partial edentulism, which denotes the absence of teeth. Established by Dr. Edward Kennedy in 1925, this classification offers a straightforward and standardized method for identifying areas of missing teeth in patients and is instrumental in guiding the design of removable partial dentures (RPDs). The classification comprises four primary types. The first type (Class I) features bilateral edentulous areas located posterior to the remaining teeth. This scenario is commonly observed in patients who have lost molars on both sides of either the upper or lower jaw, resulting in a completely toothless back portion. In such cases, partial dentures are crafted to replace these missing posterior teeth, typically requiring support from both the remaining anterior teeth and the surrounding soft tissues of the edentulous ridge. The second type (Class II) involves a unilateral edentulous area situated behind the remaining natural teeth, where the patient retains some natural teeth on the opposite side of the arch. This arrangement facilitates easier anchoring of the denture. Class II partial dentures are designed to fill the gap left by missing teeth while depending on the remaining teeth for support and stability. The third type (Class III) describes unilateral edentulous spaces bordered by natural teeth on both sides, which simplifies management since these adjacent teeth provide robust support for the partial denture. This design usually does not require soft tissue support, allowing for enhanced stability and retention through clasps. Finally, Class IV refers to a single edentulous area located in the anterior region that crosses the midline. This classification is the least common and poses unique aesthetic challenges due to the need to restore front teeth. Overall, the Kennedy Classification System is vital for developing effective and aesthetically pleasing partial denture designs, significantly improving patient outcomes in restorative dentistry

4. Oral Health Outcomes

As oral health outcomes directly impact a patient's overall well-being, choosing the most appropriate prosthetic treatment is essential (Manfredini et al., 2024). Comparing the outcomes of fixed and removable prosthetics is essential for understanding the impact of each on patients' oral health and quality of life. Research has demonstrated that both treatment options significantly improve oral health outcomes, but the extent of these improvements varies depending on the type of prosthesis and patient-specific factors (Fouda et al., 2024). Therefore, a comprehensive review of the literature is necessary to evaluate the effectiveness of fixed versus removable prosthetics in dental rehabilitation. Fixed prosthetics are often regarded as a superior choice due to their stability and close resemblance to natural teeth, offering improved masticatory function and aesthetics. Implant-supported fixed prostheses, in particular, have been shown to significantly enhance patient satisfaction and oral health-related quality of life (OHRQoL) by providing better functional outcomes, including speech and chewing efficiency (Duong et al., 2022). However, removable prosthetics, despite being less stable, offer non-invasive alternative, making them a viable option for many patients, especially those with complex health or anatomical limitations (Campbell et al., 2017).

Fixed prosthetic devices, especially those supported by implants, generally provide better oral health outcomes. Implant-supported restorations help preserve the alveolar bone by preventing resorption through osseointegration, unlike conventional removable prostheses, which may

contribute to bone loss (Khalifa et al., 2016; Yadav, 2024). Fixed prostheses also improve periodontal health, as they are easier to maintain with proper hygiene, and protect adjacent teeth since they do not depend on neighboring teeth for support. However, there are potential risks, such as peri-implantitis, which can lead to soft tissue inflammation and bone loss if not managed properly (Iacono et al., 2023.

Removable prostheses, especially conventional dentures, present several oral health concerns. One key issue is bone resorption, as the absence of natural teeth or implants leads to continued bone loss in edentulous areas, altering facial structure and affecting the denture fit over time Palmqvist and Carlsson, 2003). Additionally, the movement of these prostheses can irritate soft tissues, causing sore spots, ulcers, and a higher risk of infection (Preoteasa et al., 2015). For partial dentures, the clasps used for retention can strain the abutment teeth, potentially causing damage or contributing to periodontal issues (Campbell et al., 2017).

A systematic review investigated the oral health–related quality of life (OHRQoL) in patients with partial edentulism following various dental prosthetic treatments. Through electronic and manual searches, cohort studies and clinical trials were identified that focused on the OHRQoL outcomes of individuals receiving implant-supported crowns (ISCs), implant-supported fixed dental prostheses (IFDPs), tooth-supported fixed dental prostheses (TFDPs), implant-supported removable dental prostheses (IRDPs), and removable partial dentures (RPDs). The findings showed that both TFDP and IFDP had positive impacts on OHRQoL in the short and long term, while RPDs improved OHRQoL only in the short term. Additionally, IFDP demonstrated a more substantial short-term improvement in OHRQoL compared to both RPDs and TFDPs (Almufleh, 2020). A review of studies examined the OHRQoL of fully and partially dentate patients who received fixed or removable implant-supported prostheses. This review involved a comprehensive search of English publications up to 2021 and analyzed standardized questionnaires and scales related to OHRQoL. The study assessed functional, aesthetic, and cost-related aspects of dental implant rehabilitation. Results showed that implants significantly improved denture stability, functionality, and patient satisfaction. However, there was a notable difference between how patients and clinicians perceived aesthetic outcomes, with clinicians applying stricter standards. Overall, implant-supported prostheses have been shown to greatly improve the quality of life for patients using dentures (Duong et al., 2022).

Implant-supported fixed partial dentures (IFPDs) offer a solution for partially edentulous patients missing their posterior-most molars. A study by Watanabe et al. (2024) evaluated the impact of IFPD treatment on oral health-related quality of life (OHRQoL). The study included 40 participants: 11 received a single implant and were treated with a single-unit IFPD, while 29 had two implants and received a two-unit IFPD. The Oral Health Impact Profile (OHIP) and a masticatory performance test were used to assess outcomes before and after treatment. Results showed significant improvement in OHRQoL and masticatory function in both groups. A study investigated the relationship between oral health quality, quality of life, and the type of denture used. The research included 360 patients divided into three equal groups: Group I (fixed dentures), Group II (removable dentures), and Group III (combined fixed and removable dentures). Oral health quality was assessed using five parameters: patient history, symptoms affecting chewing and speech, extraoral and intraoral examinations, and dental capabilities. The

analysis showed that patients with fixed dentures (Group I) experienced the least negative effects in these areas, followed by those with combined dentures (Group III). Patients with removable dentures (Group II) faced the most challenges (Gnjato, 2016).

In Contrast, Liebermann and his colleagues (2021) conducted a study that found removable dentures provided greater improvements in certain aspects of oral health-related quality of life compared to fixed dentures. The clinical trial included 151 patients who were treated with fixed (n = 70), removable (n = 61), or telescopic (n = 20) dental prostheses during student courses at two German universities. The study evaluated five key dimensions: appearance, oral function, psychosocial impact, linguistic limitations, and orofacial pain. Results indicated that removable dentures offered better improvements in oral function, linguistic limitations, and appearance than fixed dentures. A study by Nyan et al. (2020) assessed the relationship between partial edentulism and the oral health impact profile (OHIP) using the OHIP-14 questionnaire, specifically the Myanmar version (OHIP-14 mm). The study involved 85 partially edentulous patients from the Department of Prosthodontics, University of Dental Medicine, Mandalay. Patients' dentition status and prosthodontic needs were recorded, and they completed the OHIP-14 mm questionnaire. Thirty patients received removable partial dentures, and their OHIP scores were compared before and after treatment. The study found a significant reduction in OHIP scores post-rehabilitation, demonstrating that removable partial dentures improved the oral health-related quality of life in partially edentulous patients.

5. Patient Satisfaction

Among the various restorative options available, fixed and removable prosthetic devices are the most commonly employed solutions. Fixed prosthetics, such as crowns, bridges, and implants, are permanently affixed to the patient's mouth, offering stability and often superior aesthetic outcomes. In contrast, removable prosthetics provide flexibility and ease of maintenance but may be associated with issues such as discomfort and instability. Understanding these differences is essential for dental practitioners, as it can guide treatment decisions and improve patient-centered care. Patient satisfaction is a vital metric in assessing the success of dental rehabilitation efforts. It encompasses various factors, including functional efficacy, comfort, aesthetics, and the psychological well-being of patients (Al Ghanem et al., 2023). Research indicates that satisfaction levels can significantly differ between fixed and removable prosthetic options, influenced by factors such as individual patient preferences, socioeconomic status, and the specific clinical context. In general, prosthetic treatments, regardless of type, improve the quality of life related to oral health. A study assessed patient satisfaction and oral health-related quality of life (OHRQoL) in fully edentulous patients treated with fixed implant-supported prostheses (FP), removable implant-supported prostheses (RP), or complete dentures (CD). Eighty-six patients participated: 29 with FP, 27 with RP, and 30 with CD. The evaluation included a patient satisfaction scale and the Oral Health Impact Profile (OHIP-14), measuring OHRQoL before and after treatment. OHRQoL improved across all groups post-treatment. FP and RP groups had greater improvement compared to the CD group (Oh et al., 2016). One study evaluated oral health–related quality of life (OHRQoL) and patient satisfaction in 74 partially edentulous participants (aged 36 to 57) before and after rehabilitation with mandibular attachment-retained

removable prostheses versus conventional removable prostheses. Initially, 56 participants received clasp-retained removable dental prostheses (RDPs), and 18 received overdentures (ODs). Assessments before treatment and two months after wearing each prosthesis showed significant improvements in OHRQoL and patient satisfaction for all participants. Overall, both conventional and attachment-retained prostheses resulted in a substantial improvement in patient satisfaction and elevated oral health-related quality of life (OHRQoL) across all dimensions when measured against pre-treatment conditions. Attachment-retained prostheses were favored by participants, offering greater satisfaction and improved quality of life (Swelem and Abdelnabi, 2021).

Fixed prosthetic devices generally receive high levels of patient satisfaction. Multiple studies have shown that patients with fixed prostheses report improved comfort, chewing ability, and confidence, particularly in comparison to removable devices. The primary factors contributing to higher patient satisfaction with fixed prostheses include their stability and functionality, providing better support during eating and speaking, which feels more natural and comfortable. Additionally, these devices closely replicate the appearance of natural teeth, blending well with the surrounding oral tissues for improved aesthetics. Psychologically, fixed prostheses boost confidence, as patients do not have to worry about the device shifting or moving during everyday activities, contributing to a greater sense of security and ease. In a study by Carek et al. (2021), 235 Croatian patients (163 women and 72 men) were surveyed on their satisfaction with fixed prosthodontic work. The participants were in different stages of prosthetic treatment, with 176 having completed the process. The majority expressed satisfaction with the aesthetics and functionality of the prosthetics, noting that factors like color and appearance improved self-confidence and quality of life. Additionally, many patients reported that their new smile was noticed by others, enhancing their overall satisfaction. Another study evaluated Libyan patients' expectations and satisfaction with fixed prostheses (crowns, veneers, fixed partial dentures, and implants), including their oral hygiene practices. Questionnaires were administered to 320 participants, assessing their perceptions of aesthetics, speech, and chewing function. Results showed 80.9% overall satisfaction, with 78.4% pleased with chewing, 85.3% with aesthetics, and 39.4% with speech. The prostheses met the expectations of 82.8% of patients. Correlations were found between masticatory function, aesthetics, and patient expectations. The study emphasized the importance of oral hygiene for better patient outcomes (Kashbur and Bugaighis, 2019). According to a study by Geiballa et al. (2016) evaluated patient satisfaction with fixed prostheses and their awareness of oral hygiene practices through a survey of 192 patients. The survey assessed perceptions of aesthetics, chewing ability, speech, and oral hygiene. Results showed that 84% of patients were satisfied with their prostheses overall, with 80% satisfied with aesthetics, but only 46.4% were content with their chewing ability. A notable 94% of patients did not use interdental cleaning aids, and 91.1% attributed this to a lack of post-treatment instructions from their dentist. The study highlighted a significant gap in patient education regarding the maintenance of fixed prostheses, as many dentists did not provide adequate guidance on using dental aids to care for the prosthesis.

A cross-sectional study evaluated the satisfaction levels of 100 patients, both male and female, who had recently received crowns and bridges (Zubair et al., 2022). A self-structured questionnaire assessed satisfaction based on prosthesis type, material, mastication, aesthetics,

taste, and odor. The sample included 46 males and 54 females, with an average age of 37. Most patients had metallic ceramic crowns. About 79% reported comfort with chewing, while 98% were satisfied with the aesthetics of their prostheses. Additionally, 93% did not experience any bad odor. A small percentage expressed dissatisfaction with their sense of taste and speech. Overall, the majority of patients were satisfied with their crowns and bridges, particularly in terms of aesthetics and functionality. A study by Albaqawi et al. (2023) assessed the quality of fixed dental prostheses and patient satisfaction among 421 patients who received crown and tooth-supported fixed partial dentures (FPDs) at the Dental Polyclinics Center in Ha'il, Saudi Arabia, between 2010 and 2020. Evaluation criteria included patient satisfaction and technical and biological factors related to the crowns and FPDs. The majority of patients were satisfied with their restorations, suggesting that patient satisfaction can serve as a reliable indicator for predicting the success and longevity of such dental treatments. Another study conducted sought to assess patient satisfaction with fixed partial dentures (FPD), examining factors such as chewing ability, aesthetics, speech, comfort, oral hygiene, and ease of cleaning. The research involved 200 participants, with an average age of 37.72 years. Among the participants, 64% had used FPDs for 0-3 years, 17% for 4-7 years, and 19% for more than 10 years. The findings indicated that the majority of patients were very satisfied with their FPDs (Nayan and Kumari, 2019). To assess the satisfaction and oral health-related quality of life (OHRQoL) of patients who received fixed partial dentures (FPD) at a Nigerian tertiary health facility over 10 years. Clinical records of 44 eligible participants were reviewed, and follow-up data were collected via phone. Most patients received conventional fixed-fixed prostheses with porcelain-fused-to-metal crowns. Initially, 48.9% of patients reported high satisfaction with the appearance of their FPD, but this dropped to 31.1% after prolonged use. Participants, aged 21 to 72 years (mean age 46.8), showed higher satisfaction with aesthetics, chewing, and speech after treatment compared to before. However, aesthetic satisfaction declined over time, though overall long-term satisfaction with function and appearance remained better than before treatment (Gbadebo et al., 2023).

Removable prosthetics devices offer a non-invasive, cost-effective option for dental rehabilitation, restoring essential functions such as chewing, speaking, and maintaining facial aesthetics. Despite the widespread use of removable prosthetics, patient satisfaction remains a complex and multifaceted issue, influenced by a variety of factors including comfort, stability, aesthetics, and ease of use. Patient satisfaction with removable prostheses tends to be lower than with fixed options. Research indicates that individuals using conventional removable prostheses often face challenges such as discomfort, difficulties with chewing, and embarrassment due to the device shifting while speaking or eating. Key issues with removable prostheses include stability concerns, as traditional dentures depend on suction and the residual ridge, which can lead to a less secure fit over time; comfort problems due to pressure on soft tissues, particularly during chewing; and aesthetic limitations, as dentures may not blend as seamlessly as fixed prostheses, especially when bone loss affects facial appearance. A systematic review of 35 articles examined patient satisfaction with RPDs and the factors that influence it (Awawdeh et al., 2024). Key factors affecting satisfaction included age, with older individuals reporting higher levels; gender, as women expressed greater satisfaction regarding appearance than men; and prior experience with RPDs, which correlated positively with satisfaction. The type of RPD—whether metal or flexible—also influenced satisfaction, with flexible options generally preferred.

Additionally, the presence of attachments like magnets or implants improved satisfaction levels. However, common issues such as pain, aesthetic dissatisfaction, and challenges in maintaining cleanliness were significant sources of discontent. In contrast, removable dentures remain a common choice due to their affordability, ease of use, and applicability in cases of extensive tooth loss (Saeed et al., 2020). While these prosthetics may require more frequent adjustments and maintenance, they offer a more cost-effective solution, especially for elderly or edentulous patients (Ghiasi et al., 2022). However, studies indicate that patients with removable dentures report more discomfort, decreased chewing ability, and lower overall satisfaction compared to those with fixed alternatives.

6. Longevity and Maintenance

The choice between fixed and removable prosthetics in dental rehabilitation has significant implications for maintenance and long-term outcomes. Both options have distinct advantages and challenges regarding durability, upkeep, and overall longevity. Fixed prosthetic devices, such as implant-supported crowns, bridges, and fixed dental prostheses, are typically known for their greater durability compared to removable alternatives (Roland, 2021). Studies have shown that implant-supported fixed prostheses can last for decades with proper care, offering stability and functionality comparable to natural teeth. Their long lifespan is attributed to osseointegration, the process by which implants fuse with the jawbone, preventing bone resorption and maintaining the structural integrity of the oral cavity (Alfaraj et al., 2023). However, the longevity of fixed prosthetics largely depends on factors such as patient hygiene, regular dental checkups, and the management of risks like peri-implantitis—a condition involving inflammation around the implant, which can lead to bone loss if untreated. Studies indicate that while fixed prosthetics require less daily maintenance than removable prostheses, they demand vigilant long-term care to prevent complications (Binhuraib et al., 2024). Regular dental cleanings and proper oral hygiene are critical to preventing issues such as plaque accumulation and peri-implant infections, which can significantly reduce the lifespan of fixed devices. Research indicates that, with proper maintenance, fixed prostheses can remain functional for decades. However, they may occasionally need adjustments or repairs, such as addressing ceramic chipping or loose screws in implant-supported models (Jivraj, 2018). Maintaining fixed prostheses involves regular dental visits to assess both the prosthesis and surrounding tissues, professional cleaning to reach difficult areas, especially around implants, and daily home care, including flossing and using interdental brushes to maintain oral hygiene.

Removable prosthetics, including traditional dentures and overdentures, offer a more affordable and less invasive option for many patients. However, they generally have a shorter lifespan and higher maintenance requirements than fixed alternatives. Removable dentures tend to wear out over time, with materials such as acrylic or resin becoming prone to fractures, wear, and discoloration (Ardelean et al., 2022). Additionally, the constant removal and reinsertion of the prosthesis can lead to loosening and the need for frequent adjustments or relines to maintain proper fit. One significant challenge with removable prosthetics is the potential for accelerated alveolar bone loss, as they do not provide the same stimulation to the jawbone as fixed implants (Yadav, 2024). This bone resorption leads to changes in the facial structure and further

compromises the fit and function of the prosthesis over time, often necessitating more frequent replacements or modifications. Additionally, removable dentures can contribute to soft tissue irritation and increase the risk of infection if not regularly cleaned and maintained (Dakka et al., 2022). Patients must adhere to a strict maintenance routine, including removing the prosthesis at night, cleaning it thoroughly, and visiting the dentist for regular adjustments. Despite these challenges, advances in removable prosthetic design, such as implant-supported overdentures, have improved both the longevity and maintenance of these devices. Implant-supported removable prostheses offer better stability and reduce bone loss compared to conventional dentures, resulting in greater long-term success and patient satisfaction (Niakan et al., 2024).

7. Conclusion

In comparing fixed and removable prosthetic devices, fixed prostheses generally provide superior outcomes in terms of patient satisfaction, oral health, and long-term maintenance, especially when supported by dental implants. However, removable prostheses remain a viable and cost-effective option for patients who may not be candidates for fixed restorations or who require more flexibility in their treatment. Additionally, innovations in removable prosthetics, such as implant-retained overdentures, hold promise for improving patient satisfaction and oral health outcomes for individuals who cannot access fixed options. The decision-making process should consider the patient's clinical needs, aesthetic preferences, and ability to manage long-term maintenance. As technology advances, particularly in implantology and materials science, the boundaries between fixed and removable prosthetic devices will likely continue to blur, offering patients more options for durable, functional, and aesthetically pleasing dental restorations.

WORKS CITED

Aida, J., Takeuchi, K., Furuta, M., Ito, K., Kabasawa, Y. and Tsakos, G., 2022. Burden of oral diseases and access to oral care in an ageing society. International dental journal, 72(4), pp.S5-S11.

Al Ghanem, E.J., AlGhanem, N.A., AlFaraj, Z.S., AlShayib, L.Y., AlGhanem, D.A., AlQudaihi, W.S. and AlGhanem, S.Z., 2023. Patient Satisfaction with Dental Services. Cureus, 15(11).

Albaqawi, A.H., Aljanakh, M.D., Alshammari, B.N., Alshammari, M.A., Alshammari, R.H., Alshammari, G.D., Alshammari, B.Z., AlShammari, R.A., Alturki, R.F. and Madfa, A.A., 2023. Quality of Fixed Dental Prostheses and Patient Satisfaction in a Sample From Saudi Arabia. Cureus, 15(12).

Alfaraj, T.A., Al-Madani, S., Alqahtani, N.S., Almohammadi, A.A., Alqahtani, A.M., AlQabbani, H.S., Bajunaid, M.K., Alharthy, B.A. and Aljalfan, N., 2023. Optimizing Osseointegration in Dental Implantology: A Cross-Disciplinary Review of Current and Emerging Strategies. Cureus, 15(10).

Almufleh, B.S., 2020. Patient-reported Outcomes of Removable Partial Denture Treatment. McGill University (Canada).

Alwohaibi, R.N., Almaimoni, R.A., Alshrefy, A.J., AlMusailet, L.I., AlHazzaa, S.A. and Menezes, R.G., 2023. Dental implants and forensic identification: A systematic review. Journal of Forensic and Legal Medicine, 96, p.102508.

Ardelean, L.C., Rusu, L.C. and Tigmeanu, C.V., 2022. Alternative Denture Base Materials for Allergic Patients. In Oral Health Care-An Important Issue of the Modern Society. IntechOpen.

Awawdeh, M., Alotaibi, M.B., Alharbi, A.H., Alnafisah, S.A., Alasiri, T.S. and Alrashidi, N.I., 2024. A Systematic Review of Patient Satisfaction With Removable Partial Dentures (RPDs). Cureus, 16(1).

Barootchi, S., Askar, H., Ravidà, A., Gargallo-Albiol, J., Travan, S. and Wang, H.L., 2020. Long-term clinical outcomes and cost-effectiveness of full-arch implant-supported zirconia-based and metal-acrylic fixed dental prostheses: a retrospective analysis.

Becker, M.J. and Turfa, J.M., 2017. The Etruscans and the history of dentistry: the golden smile through the ages. Routledge.

Binhuraib, H. M., Alqarni, S. S., Mohsen, N. M., Alharbi, A. A., Alghamdi, A. I., Almotairi, A. M., Alhussain, A. H., Felemban, R. A., Alzahrani, A. S., Eyouni, E. S., & Alhajjaji, R. I. (2024). Long-term maintenance and complications of fixed dental prostheses. International Journal of Community Medicine and Public Health, 11(2), 977–981.

Bon. (2023, December 29). Fixed Dental Implant Bridges vs Snap On Dentures. Carmel Dental Associates. doi: https://2u.pw/nZoLLH6O

Campbell, S.D., Cooper, L., Craddock, H., Hyde, T.P., Nattress, B., Pavitt, S.H. and Seymour, D.W., 2017. Removable partial dentures: The clinical need for innovation. The Journal of prosthetic dentistry, 118(3), pp.273-280.

Campbell, S.D., Cooper, L., Craddock, H., Hyde, T.P., Nattress, B., Pavitt, S.H. and Seymour, D.W., 2017. Removable partial dentures: The clinical need for innovation. The Journal of prosthetic dentistry, 118(3), pp.273-280.

Carek, A., Brkic, B., Cigic, M., Jelavic, I. and Kurilic, A., 2021. Fixed prosthodontic patient satisfaction survey. Psychiatr Danub, 33(Suppl 4), pp.1320-1326.

Cinquini, C., Alfonsi, F., Marchio, V., Gallo, F., Zingari, F., Bolzoni, A.R., Romeggio, S. and Barone, A., 2023. The Use of Zirconia for Implant-Supported Fixed Complete Dental Prostheses: A Narrative Review. Dentistry Journal, 11(6), p.144.

Dakka, A., Nazir, Z., Shamim, H., Jean, M., Umair, M., Muddaloor, P., Farinango, M., Ansary, A. and Khan, S., 2022. Ill effects and complications associated to removable dentures with improper use and poor oral hygiene: A systematic review. Cureus, 14(8).

Dave Johnson Dental Lab, Inc. (2023, June 7). Types of Overdenture Implants | Dave Johnson Dental Lab |. Dave Johnson Dental Laboratry. doi: https://2u.pw/XLX5fyM9

Duong, H.Y., Roccuzzo, A., Stähli, A., Salvi, G.E., Lang, N.P. and Sculean, A., 2022. Oral health-related quality of life of patients rehabilitated with fixed and removable implant-supported dental prostheses. Periodontology 2000, 88(1), pp.201-237.

Elosta, W. (2023, December 20). Types of Dental Ceramics Used for Crowns and Veneers. Lansdowne Family Dental - Implant and Cosmetic Center. doi: https://2u.pw/bLCBm2ba

Esposito, M., Grusovin, M.G., Felice, P., Karatzopoulos, G., Worthington, H.V. and Coulthard, P., 2009. Interventions for replacing missing teeth: horizontal and vertical bone augmentation techniques for dental implant treatment. Cochrane database of systematic reviews, (4).

Fouda, S.M., Gad, M.M., Ellakany, P., El Zayat, M., AlGhamdi, M., Abdelrahman, H. and El-Din, M.S., 2024. Impact of prosthetic rehabilitation on oral health-related quality of life of Saudi Adults: A prospective observational study with pre–post design. The Saudi Dental Journal, 36(7), pp.1000-1005.

Gbadebo, S.O., Okeaya-Inneh, O.C., Adeosun, O.D. and Ajayi, D.M., 2023. Patient's Perceived Satisfaction and Quality of Life with Fixed Partial Denture: A 10-Year Retrospective Assessment in a Tertiary Institution, South-West, Nigeria. Nigerian Journal of Medicine, 32(3), pp.268-274.

Geiballa, G.H., Abubakr, N.H. and Ibrahim, Y.E., 2016. Patients' satisfaction and maintenance of fixed partial denture. European journal of dentistry, 10(02), pp.250-253.

Ghiasi, P., Petrén, S., Chrcanovic, B. and Larsson, C., 2022. Comparative cost analysis of different prosthetic rehabilitations for the edentulous maxilla: early results from a randomized clinical pilot study. BDJ open, 8(1), p.8.

Gnjato, S., 2016. Impact of dentures on oral health-related quality of life. Medicinski pregled, 69(7-8), pp.203-211.

Iacono, V.J., Bassir, S.H., Wang, H.H. and Myneni, S.R., 2023. Peri-implantitis: effects of periodontitis and its risk factors—a narrative review. Frontiers of Oral and Maxillofacial Medicine, 5.

Jdand. (2022, March 25). Classification and Elements of Removable Partial Dentures - Owens. Scott J. Owens DDS Cosmetic & Family Dentistry. doi: https://2u.pw/dJtB8MiG

Jivraj, S., 2018. Screw versus cemented implant restorations: The decision-making process. Journal of Dental Implants, 8(1), pp.9-19.

Kashbur, N. and Bugaighis, I., 2019. Patients' satisfaction, expectation, care, and maintenance of fixed prosthesis. Libyan International Medical University Journal, 4(01), pp.26-32.

Kavita, K., Iqubal, M.A., Singh, R., Singh, S., Nazeer, J. and Singh, R., 2020. Factors affecting patient satisfaction among patients undergone removable prosthodontic rehabilitation. Journal of Family Medicine and Primary Care, 9(7), pp.3544-3548.

Khalifa, A.K., Wada, M., Ikebe, K. and Maeda, Y., 2016. To what extent residual alveolar ridge can be preserved by implant? A systematic review. International journal of implant dentistry, 2, pp.1-9.

Kumar, V.V., Ebenezer, S. and Thor, A., 2021. Bone Augmentation Procedures in Implantology. Oral and Maxillofacial Surgery for the Clinician, pp.407-426.

Liebermann, A., Erdelt, K., Lente, I., Edelhoff, D., Schmitter, M. and Winter, A., 2021. Oral health-related impact profile of patients treated with fixed, removable, and telescopic dental prostheses in student courses—a prospective bicenter clinical trial. Clinical Oral Investigations, 25, pp.2191-2201.

Lori. (2024, May 23). Everything You Need to Know About Bar Retained Overdentures. Advanced Dentistry. doi: https://2u.pw/Vdb6OK84

Madfa, A.A. and Yue, X.G., 2016. Dental prostheses mimic the natural enamel behavior under functional loading: A review article. Japanese Dental Science Review, 52(1), pp.2-13.

Maló, P., de Araújo Nobre, M., Lopes, A., Ferro, A. and Botto, J., 2019. The All-on-4 treatment concept for the rehabilitation of the completely edentulous mandible: A longitudinal study with 10 to 18 years of follow-up. Clinical implant dentistry and related research, 21(4), pp.565-577.

Manfredini, M., Pellegrini, M., Rigoni, M., Veronesi, V., Beretta, M., Maiorana, C. and Poli, P.P., 2024. Oral health-related quality of life in implant-supported rehabilitations: a prospective single-center observational cohort study. BMC Oral Health, 24(1), pp.1-10.

Nayan, K. and Kumari, L., 2019. Patient's Satisfaction with the Use of Fixed Partial Denture.

Niakan, S., Mahgoli, H., Afshari, A., Mosaddad, S.A. and Afshari, A., 2024. Conventional maxillary denture versus maxillary implant-supported overdenture opposing mandibular implant-supported overdenture: Patient's satisfaction. Clinical and experimental dental research, 10(1), p.e813.

Nurelhuda, N., Lee, H. and Bridge, G., 2021. Oral health in the Arab world: The silent epidemic of dental caries. In Handbook of Healthcare in the Arab World (pp. 3461-3480). Cham: Springer International Publishing.

Nyan, M., Oo, S.Z., Hlaing, E.E., Thin, S.M., Myint, H.K., Win, A. and Tint, K., 2019. A study of relationship between partial edentulism and oral health related quality of life (OHRQoL) and effect of removable partial denture treatment on OHRQoL. Myanmar Dental Journal, 26(1), pp.41-46.

Oh, S.H., Kim, Y., Park, J.Y., Jung, Y.J., Kim, S.K. and Park, S.Y., 2016. Comparison of fixed implant-supported prostheses, removable implant-supported prostheses, and complete dentures: patient satisfaction and oral health-related quality of life. Clinical oral implants research, 27(2), pp.e31-e37.

Palmqvist, S. and Carlsson, G.E., 2003. The combination syndrome: a literature review. The Journal of prosthetic dentistry, 90(3), pp.270-275.

Peres, M.A., Macpherson, L.M., Weyant, R.J., Daly, B., Venturelli, R., Mathur, M.R., Listl, S., Celeste, R.K., Guarnizo-Herreño, C.C., Kearns, C. and Benzian, H., 2019. Oral diseases: a global public health challenge. The Lancet, 394(10194), pp.249-260.

Preoteasa, E., Preoteasa, C.T., Iosif, L., Magureanu, C.M. and Imre, M., 2015. Denture and overdenture complications. Emerging Trends in Oral Health Sciences and Dentistry, pp.193-226.

Roland, J. (2021, August 31). 5 Types of Dental Prosthesis Devices. Healthline. doi: https://2u.pw/b0nf537V

Ruiz, Y. (2024, March 1). The Evolution of Dentures: From Past to Present - EGil Dental. EGil Dental. doi: https://2u.pw/pLtpfJBi

Saeed, F., Muhammad, N., Khan, A.S., Sharif, F., Rahim, A., Ahmad, P. and Irfan, M., 2020. Prosthodontics dental materials: From conventional to unconventional. Materials Science and Engineering: C, 106, p.110167.

Salama, A., 2023. Fixed Detachable Prosthesis/Hybrid prosthesis: Literature Review. MSA Dental Journal, 2(2), pp.42-48

Shrestha, L., Dahal, S., Pradhan, D. and Lohani, J., 2020. Satisfaction level among patients treated with fixed dental prosthesis in a tertiary care hospital: A descriptive cross-sectional study. JNMA: Journal of the Nepal Medical Association, 58(221), p.15.

Sirikrai, D. (2021, August 24). The difference between All-on-4, All-on-6 and All-on-8 dental implants. Thantakit International Dental Center. doi: https://2u.pw/xZRDLHHo

Stephens, C., 2023. A brief history of the development and use of vulcanised rubber in dentistry. British Dental Journal, 234(8), pp.607-610.

Swelem, A.A. and Abdelnabi, M.H., 2021. Attachment-retained removable prostheses: Patient satisfaction and quality of life assessment. The Journal of Prosthetic Dentistry, 125(4), pp.636-644.

Watanabe, H., Abe, Y., Kusumoto, Y., Yokoi, T., Yokoyama, S., Hirai, T., Itoh, H. and Baba, K., 2024. Effect of treatment with implant-supported fixed partial dentures on oral health-related quality of life in patients with unilateral shortened dental arch. Journal of Dental Sciences.

Wda_Eugene. (2023, January 10). Fixed Hybrid Denture: What You Need to Know. Weymouth Dental Arts. doi: https://2u.pw/oe6Phx0H

World Health Organization. (2022, November 18). "Global oral health status report: towards universal health coverage for oral health by 2030". doi: https://n9.cl/6u0is.

Yadav, R. (2024, October 11). Explore How Dental Implants and Bone Preservation Work Hand in Hand for a Lasting Smile. Dentist Caroline Springs VIC. doi: https://linksshortcut.com/RGQdc

Zubair, N., Raza, M., Khan, M.S., Ubaid, B., Alam, A., Hashim, L. and Ali, Z., 2022. Evaluation of patient satisfaction with fixed Prosthodontic therapy visiting Prosthodontic department of a Teaching Dental Hospital: Patient Satisfaction Towards Fixed Prosthodontic therapy. Pakistan Journal of Health Sciences, pp.212-215.