IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 23, Issue 6 Ser. 10 (June. 2024), PP 32-35
www.iosrjournals.org

Psychological And Emotional Impacts Of Orthodontic Treatment: Patient Perspective And Coping Strategies

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Abstract:
Orthodontic interventions, aimed at improving dental alignment and facial aesthetics, often lead to a range of emotional responses and challenges for patients. These impacts include concerns about self-image, social interactions, and overall quality of life. This review delves into the psychological and emotional impacts of orthodontic treatment, emphasizing how malocclusion and orthodontic procedures affect human psychology. It explores psychological strategies for improving patient well-being during treatment and discusses coping mechanisms like social support, cognitive reframing, and involvement in treatment decisions. The importance of patient-centered care and effective communication between orthodontists and patients is underscored.Additionally, the article suggests areas for further research to better understand and support patients through the emotional journey of orthodontic treatment.

Keywords:*Malocclusion, Orthodontic management, Psychological impacts, Emotional effects, Patient perspective, Coping strategies, Patient-centered care, Social support, Cognitive reframing*

Date of Submission: 17-06-2024 Date of Acceptance: 27-06-2024

I. Introduction

Human psychology explores behaviour, mental processes, thoughts, emotions, perceptions, reasoning, memories, and biological functions.[1] Humans form rapid character judgments based on facial appearance, with children as young as 3 years old assessing traits like "nice," "strong," and "smart" from subtle facial features and physiognomy (latent face-traits). By age 3, children use facial features for character evaluations but not for judging behaviour. By age 5, they assess both character and behaviour from facial traits. By kindergarten, children give gifts to individuals with trustworthy and submissive-looking faces, aligning with their character evaluations. This suggests that even subtle facial traits influence children's social judgments and interactions.[2]Psychosocial factors significantly influence the decision-making process for orthodontic treatment, encompassing cognitive, emotional, and behaviouraldimensions.[3] The appearance of one's teeth can prompt societal judgments that impact peer interactions and emotional development during childhood. Extensive research has explored how malocclusion affects psychological well-being, including self-perception, quality of life, and social interactions. Malocclusion, particularly when accompanied by facial irregularities, significantly impacts self-confidence and self-esteem among patients.[4]The psychological effects can be profound, influencing how individuals perceive themselves and interact socially.In contemporary patient-doctor relationships, traditional methods of communication, such as verbal explanations supported by models, may not adequately address the emotional and psychological concerns associated with orthodontic treatment. This inadequacy highlights the importance of integrating advanced visual education technologies, which can provide clearer and more comprehensive information to patients.[5]Addressing dental fear is crucial, especially during the initial stages of orthodontic treatment.

Anxiety tends to peak during procedures like banding or bonding appointments.Orthodontists can benefit from heightened awareness of these anxieties, enabling them to implement effective anxiety-reduction strategies early on.[6] Regarding awareness of dento-facial aesthetics, perceptions vary across age groups. Younger children may be more accepting of minor dental imperfections like gaps, whereas older children and adults often prefer more aligned teeth.[7]This understanding underscores the importance of considering age-specific attitudes and expectations when planning orthodontic treatment and counselling patients. Overall, recognizing the psychological impacts of malocclusion, utilizing advanced visual tools for patient education, and addressing dental anxiety effectively are essential elements in providing holistic orthodontic care that enhances both physical and psychological well-being is essence of this review.[8]

II. Discussion

A pleasing facial appearance strongly influences initial impressions and societal behaviours, driven by media's ideal beauty standards and increasing demand for cosmetic procedures. Dental aesthetics are crucial for facial attractiveness and perceived personal traits, particularly in certain professions where appearance is paramount.[9] Standards for facial and dental aesthetics are generally consistent across developed countries, with deviations viewed unfavourably. Many individuals seek orthodontic treatment to improve their smile and overall facial aesthetics. During treatment, especially with visible braces or aligners, patients may experience temporary decreases in self-esteem due to concerns about appearance. The process of orthodontic treatment can be lengthy and involve discomfort, which may contribute to anxiety and stress in patients, particularly before appointments or during adjustments. Adolescents, in particular, may feel self-conscious about their braces among peers, affecting social interactions and confidence levels.[10]

Physical discomfort from braces or aligners can influence emotional well-being, especially after adjustments or during the initial stages of treatment. Patients may feel frustrated if the results are not as quick as expected or if there are setbacks in the treatment plan. Completing orthodontic treatment successfully can bring about a sense of relief and satisfaction, improving emotional well-being.Fear of being judged for having braces or aligners may lead to emotional stress, particularly in social and professional settings.[11]Shaw in 1981 highlighted that children and adolescents with noticeable malocclusions, such as pronounced overjet or gaps, are more susceptible to bullying due to societal norms associating dental appearance with attractiveness and social characteristics. Severe malocclusions not only affect aesthetics but also hinder oral function, influencing self-esteem and interactions with others.[12] Class II protrusion and deep bite types are specifically linked with lower self-esteem. Well-aligned teeth generally enhance self-perception, whereas malocclusions like crowding and overjet can lead to anxiety, though in severe cases they may paradoxically boost confidence. Psychosocial factors beyond mere cosmetic concerns drive individuals to seek orthodontic treatment.[13]Malocclusions such as crowding and deep bite diminish facial attractiveness, impacting social relationships and causing anxiety.[14]Irregular dental alignment may result in neglect of oral hygiene. Orthodontic treatment improves aesthetics, function, and self-esteem but increases risks such as enamel demineralization, tooth decay, and gingivitis due to plaque buildup around appliances. Maintaining excellent oral hygiene during treatment is crucial to prevent dental caries and gingivitis. The primary goal is to enhance dental occlusion and alignment, improving overall dental function and facial aesthetics. Despite its advantages, fixed appliances can trap food, leading to plaque accumulation and related dental issues. Diligent plaque removal is essential to prevent gingivitis, cavities, and halitosis.

Orthodontic treatment also enhances adults' adherence to dental care, which supports better oral health.[15]A questionnaire revealed that 82.9% of patients sought treatment due to teeth misalignment, with 85.7% recognizing the necessity of orthodontic care in their daily lives.[16]Despite its benefits, fixed orthodontic appliances can trap food easily, promoting plaque build up. Without careful plaque removal from teeth and brackets, patients face risks such as gingivitis, dental caries, and bad breath. There is a direct link between oral health, particularly plaque, and caries incidence in orthodontic patients. A proactive preventive program should be integral to orthodontic treatment to mitigate these factors. This review aims to highlight oral hygiene practices among patients wearing fixed orthodontic appliances. Effective plaque control is crucial for orthodontic patients to prevent caries.[17] Brushing for at least 2 minutes after each meal (at least 3 times daily) is recommended. Techniques like 5am cords, modified Stillman, and Bass methods are beneficial. The Bass method is especially effective in reducing plaque and gingival indices with fixed orthodontic appliances.[18]In one study it was concluded that approximately 60% used orthodontic toothbrushes, while others chose soft-bristled regular brushes. Orthodontic toothbrushes with bi-level bristles are designed to clean around brackets effectively.[19] Research on their effectiveness compared to conventional brushes has conflicting results, with some studies favouring electric toothbrushes for plaque removal. However, manual brushes can be equally effective with proper technique, frequency, and duration. In terms of oral hygiene habits, 82% of patients in the study used fluoridated toothpaste, emphasizing the importance of fluoride in cavity prevention.[20]Brushing twice daily with fluoride toothpaste is recommended, especially with higher concentrations for orthodontic

patients.Most participants rinsed their mouths after meals without a toothbrush, while some used toothpicks, advised to follow with vigorous rinsing and brushing.

Dental accessories like floss, toothpicks, mouthwash, or interdental brushes were used daily by 19-36% of patients and occasionally by 50-60%, with 12-28% not using them at all. Effective brushing reaches only 60% of tooth surfaces, highlighting the need for additional cleaning methods due to food entrapment around braces was reported in one study.[21]The increasing prevalence of malocclusions is influenced by heightened self-awareness and the pervasive influence of social media, affecting mental well-being and self-esteem.[22]Severe malocclusions, like Class II with deep bite and protruding lip profiles, are associated with reduced self-esteem and quality of life.Orthodontic treatment, akin to cosmetic procedures, impacts personality and social interactions beyond physical changes.[23] Initial declines in Oral Health-Related Quality of Life during treatment typically improve after 6 months due to improved occlusion and positive psychological effects. Adults completing orthodontic treatment and entering the retention phase generally experience improved Oral Health-Related Quality of Life compared to untreated individual.[24]Initially, there may be a decrease in Body Mass Index within the first 3 months, but this typically returns to baseline by the end of the first year, indicating a temporary and minimal overall impact of orthodontic procedures on Body Mass Index.Patient self-esteem shows marked improvement throughout orthodontic treatment. Initial changes in eating habits are noticeable, but patients typically revert to their usual dietary patterns thereafter. Thus, suggesting fixed orthodontic appliances for weight loss purposes should be approached cautiously; especially in males.[25]Anxiety during orthodontic appointments is evident at various stages, including initial impressions, treatment planning discussions, separator insertions, and bracket placements. The primary source of anxiety is often related to concerns about pain during these procedures.Oral ulcerations following banding or bonding appointments two weeks after placement also contribute to anxiety.

Initially, anxiety stems from pain and unfamiliarity with the procedure, but familiarity over time reduces these concerns.[26] Cooperativeness is evaluated at 8-10 months into treatment and again at brace removal. A significant decline in cooperation between these periods suggests patient burnout over time. Early cooperation predicts future cooperation, indicating stability in patient behavior over time. Personality traits of patients, rather than parental influence, determine cooperation after 8-10 months of treatment. Patients with an external locus of control tend to be less cooperative. The shift in compliance from parental to patient factors may reflect changing parent-child dynamics during adolescence, coinciding with orthodontic treatment.[27] High compliance in orthodontic treatment involves consistent attendance, accurate appliance wear-times, and maintaining good oral hygiene, which are crucial for successful outcomes.[28]Efforts to improve patient compliance should focus on reducing waiting times with efficient scheduling systems like staggered appointments. Minimizing appliance breakages helps prevent emergencies and delays, enhancing patient satisfaction and appointment efficiency. Patient education initiatives such as videos, magazines, and health talks in waiting areas alleviate waiting stress and enhance the overall patient experience.[29]Building a strong clinician-patient relationship is essential.According to Yassir et al. (2020), orthodontists should establish trust, honesty, and loyalty with patients. Clear communication about treatment details, including benefits, risks, costs, and potential discomforts, helps manage expectations and reduces the risk of patient dissatisfaction or premature treatment discontinuation. Using patient documentation like pictures, radiographs, 3D scans, and dental models effectively illustrates treatment plans and reinforces patient motivation to endure treatment discomforts.[30]In operant conditioning, positive behaviors are more likely to be repeated when reinforced by positive consequences.

However, traditional rewards may not effectively motivate older male patients due to differences in age, gender, socioeconomic status, culture, and individual preferences.[31]Possibility of future reward compared to theimmediate reward may not have been an immediate motivation, for a behavior tobe maintained by its consequences, it must be occurring. A long delay will makethe behavior less likely to be modified by the consequence. Accumulated rewards simply increase the patients' chances to be drawn at the reward, but there is noguarantee of a win. The prospective win of a future reward may not be as strong areinforcer as a more tangible immediate reward.[32]Yee et al. found that perceived frequency of rewards had a greatereffect on patient attitudes toward reward programs, while actual frequency ofrewards had a greater effect on compliance.[33] Patients who always received actualrewards had the best compliance as shown by better oral hygiene, whereas patientswho perceived they always received rewards had the most positive attitudes.Afteradjustment for age and length of time in treatment, always receiving actual rewardswas significantly associated with good oral hygiene that were 3.8 times higher thanthose who never/rarely received actual rewards.[34]Smartphones and tablets have been widely used in health areas to improveeducation and to facilitate the patient's management. Telecommunication is amethod of communication between people (the clinician and the patients) who arephysically separated. The distance does not inhibit the clinical process but isempowered by the frequent sharing of photos and information, which allows foran increased access to oral care and for remote but strict monitoring of theevolution of a treatment.[35]In dentistry, reminders before appointments improve attendance,

especially among adolescents, and can shorten orthodontic treatment duration.WhatsApp and WeChat enhance device compliance; potentially reducing treatment time by 7.3 weeks.[36]Telecommunication enables remote patient education, lowering complications like white spot lesions.

Orthodontic patients struggle with flossing due to wire obstructions. Interdental brushes are favoured over floss for better plaque reduction and shallower probing depths. Fluoridated mouth rinses protect against enamel issues and gingivitis during orthodontic care. Daily use of 0.05% sodium fluoride rinse is recommended for fixed appliances, but less than 25% was recommended in one study. Regular use is crucial, but poor adherence, with only 42% using it every other day, links to more white spot lesions.[37]Dental monitoring reduces appointments by 3.5 visits (33.1%), thereby enhancing office efficiency.[38] Ensuring compliance with oral hygiene is crucial to prevent caries and periodontal disease.[39] Reinforcing oral health practices during follow-ups improves patient attitudes and behaviors.[40] Phase-contrast microscopy improves the effectiveness of plaque control education compared to verbal methods.[41] Researchers have observed positive outcomes from training with phase-contrast microscopy across all clinical parameters, highlighting its importance as a cost-effective and easy-to-use tool for patient motivation.[42] Furthermore, phase-contrast microscopy has shown to clinically reduce plaque formation significantly and has a longer-lasting effect compared to conventional training methods. Motivational interviewing is an evidence-based, person-centered technique that focuses on helping individuals make changes with maximum internal motivation and minimal resistance.[43]According to Gillam & Yusuf (2019), it is effective in dental practice for motivating patients to improve oral hygiene, as well as for providing guidance on diet, smoking cessation, and alcohol use.[44] It supports shared decision-making and patient-centered care.Motivational interviewing spans five stages: Engaging, Focusing, Evoking, Planning, and Review, fostering behavior change across oral and general health domains to enhance patient outcomes. Research confirms its effectiveness in improving oral health metrics like plaque and gingival indices.[45]

Dento-facial aesthetics significantly influence social perceptions and interpersonal interactions, underscoring their importance in personal life.[46]Addressing dental anxiety and building patient trust are critical for improving compliance. Modern visual aids such as smartphones and tablets have transformed patient education and management practices. Utilizing reminders before appointments and emphasizing educational initiatives are essential for promoting optimal oral hygiene practices.[47]Coping with orthodontic treatment involves several key strategies. Educating oneself about treatment stages, discomfort expectations, and realistic timelines helps alleviate anxiety and set realistic expectations. Building a strong support system with family, friends, and orthodontic professionals provides emotional encouragement. Open communication with the orthodontist allows for tailored support and adjustments if needed. Engaging in self-care practices like meditation, exercise, or hobbies helps manage stress. Keeping focused on the long-term benefits of a healthier smile can provide motivation. Finally, participating in peer support groups or online forums allows for shared experiences and practical advice. These strategies collectively support emotional well-being during orthodontic treatment.[48]

III. Conclusion

Malocclusion impacts patient satisfaction and self-esteem negatively, initially affecting quality of life, but improves with orthodontic treatment under professional guidance. Modern technology like teledentistry enhances patient education. Research is needed on the role of rewards in improving patient compliance and managing psychological issues related to beauty standards in women.

Financial support and sponsorship Nil
Conflicts of interest There are no conflicts of interest

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