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Research Article

Impact of Orthodontic Treatment on Oral Health Related Quality of Life in an Adult Population

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Abstract

Background: There is an increasing number of adult patients seeking orthodontic treatment. Adults generally present with peculiar considerations such as psychological limitations.Understanding their difficulties during treatment enables clinicians deliver more efficient treatment experiences, thus improving their oral health related quality of life. This study aimed to assess the impact of orthodontic treatment on the Oral Health Related Quality of life of adults.

Methods: A descriptive cross-sectional study. Self-administered OHIP-14 questionnaire through Google forms on WhatsApp data collection platform was used assess the patients' quality of life after obtaining consent and ethical approval. Questionnaires assessed levels of pain, discomfort, and oral functional problems using a Likert scale and OHIP.Statistical analysis was carried out using the Statistical package for social sciences [SPSS] version 28.0 with 0.05 level of significance.

Results: A total of 100 participants responded to the survey with a mean age of 24yrs and a male to female ratio of 1:3.Overall OHIP score was 20.26, with males and females demonstrating mean OHIP scores of 18.5 and 20.04 respectively (0.048). Physical discomfort was reported by 95% of respondents. Approximately 94% experienced occasional mouth pain and eating discomfort, with speech affectation in 86%. Approximately 80% and 79% reported self-consciousness and treatment-related anxiety respectively. Only 24.5% felt embarrassed about wearing braces.

Conclusion: Orthodontic treatment affects oral health related quality of life in adults, with physical discomfort being of greatest concern.

Keywords: Oral Health Related Quality of Life; OHIP; Adult Orthodontics; Malocclusion

Introduction

There is an increasing number of adult patients seeking orthodontic treatment and they present a different experience compared to children and teenagers [1]. The discomfort of wearing orthodontic appliances, rejection to the anti-aesthetic appearance of brackets, concerns about pain, and fear of disappointment with the final treatment result are some of the peculiarities of the adult patients [2]. A study conducted by Patricia., *et al*. [1] noted that orthodontists should be aware about reducing the discomfort felt during and after appliance activation appointments, which was a reason of complaint in 40% of the people interviewed.[1] Orthodontic treatment using fixed orthodontic appliances is commonly used to acheive multiple tooth movement to align teeth, which could result in functional restrictions, pain and discomfort and consequently affecting a patient's quality of life [3].

Quality of life, QOL, according to World Health Organisation, is an individual's perception of their position in life with respect

to value system and culture in their habitual environment and in relation to their standards, goals and expectations and concerns [4]. The Oral Health-Related Quality of Life (OHRQoL) gives an insight into how an individual's oral health status can affect the overall Quality of Life (QoL) [5]. OHRQoL is a self-reported condition of oral health that evaluates the functional, social, and psychological impacts of oral disease [5]. It is an important aspect of general health and well-being and corresponds to the impact of oral diseases on an individual's daily functioning and well-being [6]. It is defined as a standard of health of oral and related tissues that enables an individual to eat, speak and socialize without active disease, embarrassment or discomfort [6].

OHRQOL helps to provide a more holistic approach to management, showing the social, emotional, functional and psychological effects of adverse oral conditions [7]. It is a multifaceted term that comprises a subjective evaluation of the patient's oral health, functional well-being, emotional well-being, expectations and satisfaction with care, and sense of self-esteem [4]. The subjective evaluation of OHRQoL indicates the patient's comfort when eating, sleeping, and engaging in social interaction. It also reflects their self-esteem, and satisfaction of their oral health [8]. Assessments of oral health can indicate both the absence of negative impacts of oral conditions on social life and a positive sense of dentofacial self-esteem and general well-being [8,9].

OHRQoL assesses positive and negative dimensions across the life course in children, youths and adults.[4] It enables assessment and care that focuses on a person's social and emotional experience and physical functioning that defines the ideal treatment goals and outcomes [10-13]. OHRQoL as an outcome measure can be used to determine the effect of treatment on QOL [13]. It is a patient-oriented outcome which enables clinicians to have a clearer view of the relationship between oral health and general health by demonstrating to clinical researchers and practitioners that improving the quality of a patient's well-being goes beyond simply treating dental problems [4]. Social and psychological effects are considered the key motives for seeking orthodontic treatment, hence, OHRQOL can be considered the best measurement for orthodontic treatment need and outcome [8].

OHRQOL comprises of five different dimensions which includes oral health dimension such as pain, bleeding gums, spaced teeth, social/emotional dimension which comprises of anxiety, attractiveness and happy mood [4]. An important aspect of oral health dimension of oral health related quality of life is pain. Pain is a key deterrent to orthodontic treatment and forms a major reason for discontinuing treatment [15]. It affects compliance, patients satisfaction and treatment time [14-18].

There is paucity of knowledge of the impact of orthodontic treatment on quality of life (QoL] of adults. QoL is important in providing an understanding of the importance of, and priority for, orthodontic care of adult patients within the health care system. OHRQOL data will provide information that will enable clinicians and public health planners improve the quality of orthodontic care for adults during orthodontic treatment.

Oral Health-Impact Profile (OHIP), is a QoL measure that provides a comprehensive measure of self-reported discomfort, dysfunction and disability attributed to oral conditions.

The tool consists of 49 items organized into seven subscales and indicates how oral conditions affects functioning, as well as the social and psychological well-being of an individual [19]. A shortened form of the OHIP is the Oral health impact profile-14 (OHIP-14) which contains 14 questions and 7 domains (functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap) [20]. There are two questions in each domain.

This study aimed at assessing the impact of orthodontic treatment on the oral health related quality of life of adult orthodontic patients treated at the Lagos University Teaching Hospital [LUTH] using OHIP - 14. The objectives of this study were to assess the oral health related quality of life in adults undergoing orthodontic treatment, to assess the impact of orthodontic treatment on adult patients' quality of life and to determine the relationship between orthodontic treatment and quality of life in adults.

Materials and Methods

This was a descriptive cross-sectional study. Ethical approval was obtained from the Institutional Review Board of the Lagos University Teaching Hospital (LUTH), Nigeria before the commencement of the study [ADM/DSCST/HREC/APP/6117].

The study population comprised of adult patients who were presently undergoing orthodontic treatment at the Lagos University Teaching Hospital. A participant was considered an adult if he/she was at least 18 years as at the last birthday. A total of 100 adult participants undergoing orthodontic treatment and who had completed a minimum of 6weeks follow up post setup/appliance placement were recruited into the study.

Self-administered questionnaires (Appendix 1) using Google forms were sent via WhatsApp and used for data collection. Informed consent was obtained from study participants before completing questionnaires. The questionnaire assessed levels of pain, discomfort, and oral functional problems using a Likert scale and oral health impact profile [OHIP]. Oral Health Impact Profile (OHIP-14) was used to assess the patient's oral health related quality of life (OHQoL).The OHIP 14 consists of 14 questions, which measure the quality of life in seven fields of functional limitations, physical problems, mental and emotional problems, physical handicaps, mental and emotional handicaps, social handicaps, and complete handicap.

The subject's answers were scored in the Likert's scale a "zero" for "never", "1" for "seldom", "2" for "sometimes", "3" for "mostly" and "4" for "almost always".

A total score ranging between "0" and "56" was calculated for each subject. Higher OHIP scores indicated a high negative impact, and lower scores indicated a positive impact on oral health-related quality of life for the patients.

Patients with a history of orofacial pain, maxillofacial injuries or surgeries, congenital anomalies and mental retardation were excluded from the study.

Sample size determination

z score, (1.96) with a confidence level of 95%, ε is the margin of error (5%), N is the population size (100). p̂ is the population proportion (0.5). sample size n^1= 60 participants, with a 75% response rate, the minimum sample size for the study is approximately 100 participants.

Data analysis was carried out using the Statistical Package for the Social Science software (SPSS), version 27.0[New York, USA], with statistical significance set at $P < 0.05$. For OHIP-14, the descriptive statistics: mean and standard deviation were calculated. The statistical techniques and tests used were i] frequency and percentage tables for qualitative variables; ii] measures of centrality (mean and median) and variability (observed range, standard deviation] for quantitative variables. Independent sample t- test was used to compare OHIP scores across gender. Non -parametric tests, including the Pearson chi-square test and the Wilcoxon signed rank test were applied to assess the level of significance of change during the first six weeks of treatment.

Results

A total of 100 participants were surveyed with a mean age of 28.13 years (standard deviation of 8.370) and a range from 18 to 57 years. Gender distribution showed 73 females (73%) and 27 males (27%), indicating a preponderance of females in the study population (male to female ratio-1:2.7). Ethnic distribution showed Yoruba as the predominant ethnic group, accounting for 45.5% of the sample (46 individuals), followed by the Igbo group with 29.7% (30 individuals), and the "Others" category, which included various ethnicity, comprises 23.8% (24 individuals) of the total sample (Table 1).

A set of questions which evaluated impact of orthodontic treatment on oral function revealed speech-related challenges, with a considerable portion of respondents facing difficulties in pronouncing words. Specifically, 47.0% of individuals reported that they encountered these issues "Sometimes," while 19.0% experienced them "Mostly." In contrast, 71.0% of participants indicated that their sense of taste had "Never" worsened since they began their orthodontic treatment (Table 2).

Pain and discomfort were significant concerns during orthodontic treatment. An overwhelming 61.0% of participants stated that they felt pain or painful aching "Sometimes," 16.0% reported "Mostly and 8% almost always, totaling 85% of the surveyed population" This data suggests that a substantial proportion of respondents experienced varying levels of discomfort or pain because of their treatment. Participants were asked about their experiences with the comfort of their appliances during mealtimes. In this context, only 2.0% stated that they "Never" found it uncomfortable to eat any food, while 4.0% mentioned it happened "Seldom." More notably,25% sometimes, 44.0% "Mostly," and 23.0% "Almost Always" experienced discomfort during eating;

thus accounting for 92% of the respondents. This data shows the considerable impact of orthodontic treatment on individuals' eating habits and comfort during meals.

The psychological discomfort domain assessment revealed 50% of respondents feeling self -conscious “Mostly” or "Almost Always" with their orthodontic appliance. The feeling of anxiety was less frequently encountered as 36% of respondents reported frequency of anxiety (mostly and almost always) (Figures 1A &B). Similarly, the psychological disability domain showed mild affectation by the impact of braces on the OHRQoL, with a majority (74.5%) never feeling embarrassed as adults with braces. (Figure 2). Additionally, participants were asked whether they felt uncomfortable or found it difficult to relax because of their braces or appliances during the first 6 weeks of treatment. In this case, 18.0% mentioned that they "Never" felt uncomfortable, whereas 29.0% felt this way "Seldom," and 31.0% reported that it occurred "Sometimes." A smaller 4.0% stated that it happened "Almost Always," emphasizing the varying degrees of psychosocial affectation patients might experience during their orthodontic treatment.

The social disability domain similarly experienced minimal impact with approximately 50% of participants reporting that they "Never" had difficulty performing their routine job because of their appliances or feeling irritable because of problems with their teeth. The ability to carry out daily activities and work were minimally impacted as shown in the table 3.

An evaluation of the physical domain showed that respondents 57% of respondents sometimes, mostly or almost always were dissatisfied with their diet, while a higher percentage (75%) had to discontinue their meals due to their orthodontic appliance in the first 6 weeks of treatment (Table 3).

The impact of orthodontic treatment on daily life and overall life satisfaction was also assessed. A majority of respondents, 71.0%, reported that they "Never" felt that life, in general, was less satisfying due to wearing braces. Furthermore, the ability to function in daily life appeared to be largely unaffected by orthodontic treatment, as 64.0% mentioned they were "Never" totally unable to function due to their braces during the first 6 weeks.

The overall mean OHIP score for the entire study population was 20.26, with a standard deviation of 7.083. The physical pain domain was associated with the highest OHIP score, followed by the physical discomfort while the handicap domain had the least OHIP score (Figure 3, Table 4). An assessment of the OHIP scores across gender was done. In the "Functional Disability" domain, both males and females have similar mean scores (2.48 and 2.44, respectively), and the p-value is high (0.904), suggesting no significant gender-based difference in this domain. Likewise, in the "Physical Pain" and "Physical Disability" domains, the means for males and females were comparable with a statistically insignificant p-value (0.281 and 0.727)(Table 4). However, in the "Psychological Discomfort," "Psychological Disability," "Social Disability," and "Handicap" domains, females tend to have higher mean scores, and some of these domains have p-values close to the conventional significance threshold of 0.05. The overall mean OHIP score in this study showed the females had a higher score compared to the males (21.04 and 18.15 respectively). This difference was observed to be statistically significant with a p-value of 0.048, suggesting that gender is a significant factor influencing the impact of oral health on individuals (Table 5).

	Frequency	Percentage
Age (M ± SD, Range)	28.13 ± 8.370, 13-57	
Gender		
Female	73	72.3
Male	27	26.7
Ethnic Group		
Igbo	30	29.7
Others	24	23.8
Yoruba	46	45.5

Table 1: Sociodemographic Characteristics.

Domains	Frequency(n)	Percent (%)
Did you have trouble pronouncing words since your braces/appliance treatment commenced during the first 6 weeks?"		
Never	14	14.0
Seldom	13	13.0
Sometimes	47	47.0
Mostly	19	19.0
Almost Always	7	7.0
Has Your Sense Of Taste Worsened Since The Commencement Of Your Braces Treatment During The First 6 Weeks?		
Never	71	71.0
Seldom	6	6.0
Sometimes	19	19.0
Mostly	3	3.0
Do You Feel Pain/Painful Aching In Your Mouth With Your Braces/Appliance?		
Never	5	5.0
Seldom	10	10.0
Sometimes	61	61.0
Mostly	16	16.0
Almost Always	8	8.0
Did You Find It Uncomfortable Eating Any Food Since the Commencement of Your Braces Treatment During The First 6 Weeks Of Treatment?		
Never	2	2.0
Seldom	4	4.0
Sometimes	25	25.0
Mostly	44	44.0
Almost Always	23	23.0

Table 2: Impact of Orthodontic Treatment on oral function and pain using OHIP questionnaire.

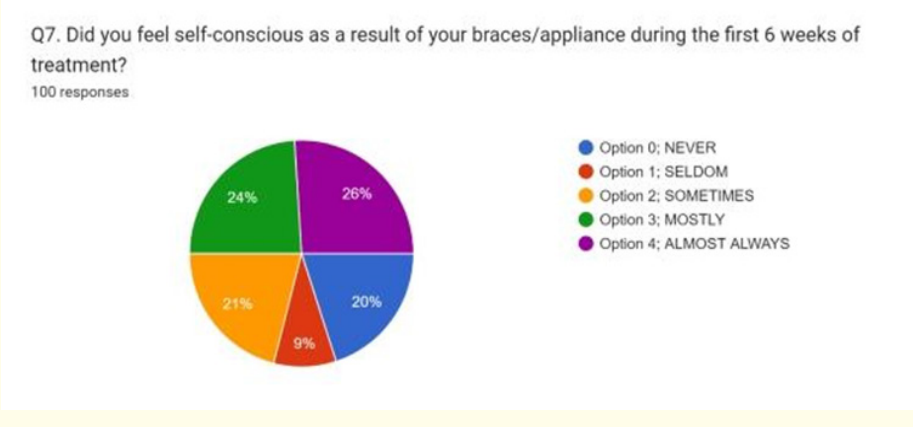

Figure 1A.

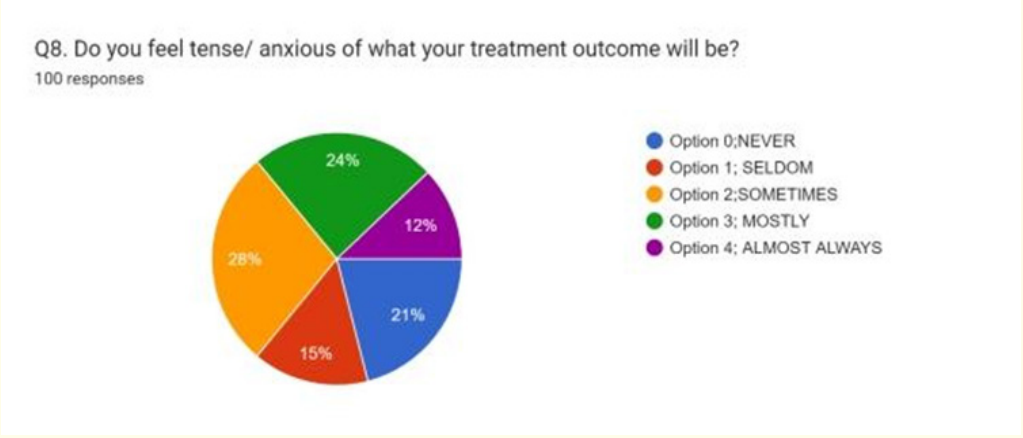

Figure 1B.

Pschological disability

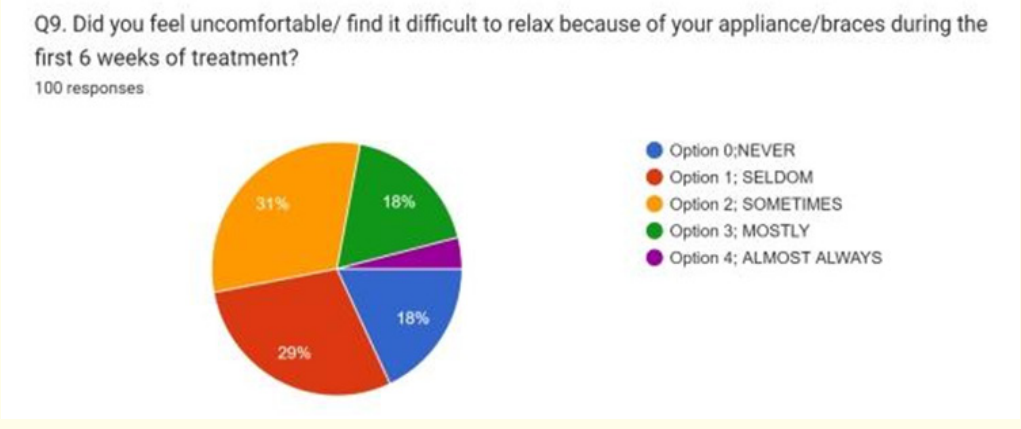

Figure 2A.

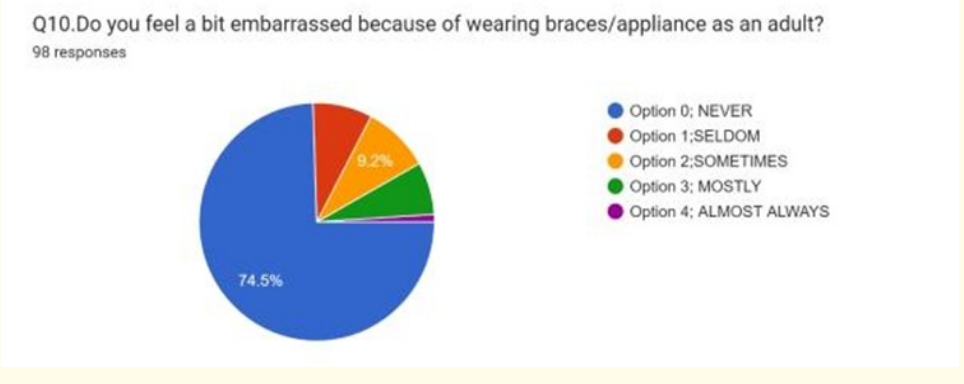

Figure 2B.

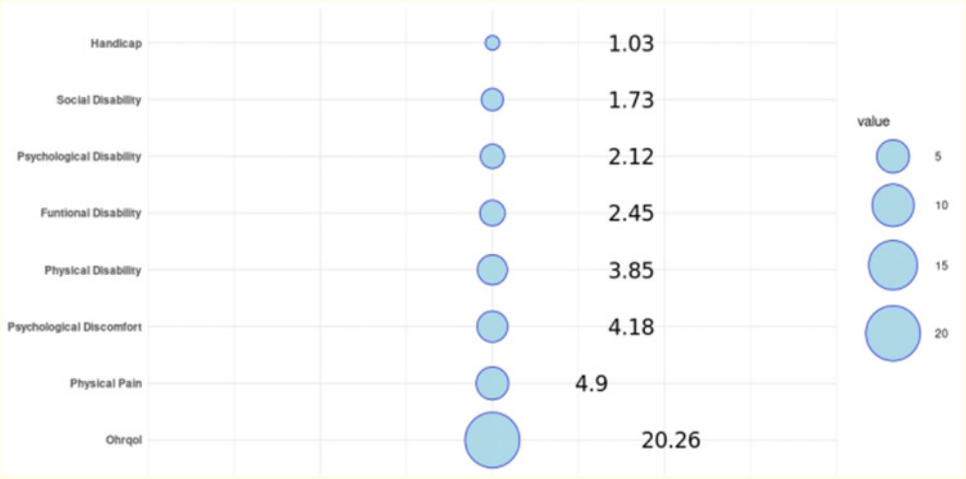

Figure 3

Domains	Frequency (n)	Percent (%)
Did You Feel Unsatisfied with Your Diet As A Result Of Your Appliance/Braces During The First 6 Weeks Of Treatment?		
Sometimes	32	32.0
Never	19	19.0
Seldom	24	24.0
Mostly	13	13.0
Almost Always	12	12.0
Do You Have to Interrupt Your Meals Because Of Your Appliances/Braces During the First 6 Weeks Of Treatment?		
Never	13	13.0
Seldom	12	12.0
Sometimes	35	35.0
Mostly	32	32.0
Almost Always	8	8.0
Did You Feel a Bit Irritable with Other People Because Of Problems with Your Teeth and Your Appliance/Braces During the First 6 Weeks Of Treatment?		
Never	52	52.0
Seldom	19	19.0
Sometimes	23	23.0
Mostly	5	5.0
Did You Find It Difficult Doing Your Routine Job as A Result of Your Appliance/Braces During the First 6 Weeks of Treatment?		
Never	48	48.0
Seldom	20	20.0
Sometimes	21	21.0
Mostly	9	9.0
Almost Always	1	1.0
Do You Have the Overall Feeling That Life, In General, Is Less Satisfying as A Result of You Wearing Appliances/ Braces?		
Never	71	71.0
Seldom	10	10.0
Sometimes	19	19.0
Were You Totally Unable to Function as A Result of Your Braces/Appliance During the First 6 Weeks?		
Never	64	64.0
Seldom	17	17.0
Sometimes	13	13.0
Mostly	4	4.0

Table 3: Impact of Orthodontic Treatment on physical, social disability and Handicapping effect using OHIP questionnaire.

		Mean	Std. Deviation	p-value
Functional Disability	Male	2.48	1.602	0.904
	Female	2.44	1.536	
Physical pain	Male	4.63	1.523	0.281
	Female	5.00	1.462	
Physical disability	Male	3.74	1.831	0.727
	Female	3.89	2.045	
Psychological Discomfort	Male	3.52	2.007	0.061
	Female	4.42	2.351	
Psychological Disability	Male	1.74	1.130	0.090
	Female	2.26	1.795	
Social Disability	Male	1.30	1.382	0.088
	Female	1.89	1.853	
Handicap	Male	0.74	1.403	0.213
	Female	1.14	1.367	

Table 4: Association between OHIP score and Gender across the different domains.

OHIP	Mean	Standard Deviation	p-value
Overall	20.26	7.083	
Gender			
Male	18.15	5.960	0.048
Female	21.04	7.340	

Table 5: Association between total OHIP score and gender.

Discussion

This study adopted a descriptive cross-sectional design which aimed at assessing the impact of orthodontic treatment on oral health related quality of life. The use of patient centred measures such as oral health related quality of life in orthodontics is important to the study of treatment needs, outcome and management of patients' expectation [1]. Oral health related quality of life (OHRQOL) should be applied in the assessment of orthodontic treatment because they reflect the patient's perspective of treatment concerns and feelings as a supplement to clinical indices [6]. The specific impact of orthodontic treatment on OHRQOL can vary from patients to patients depending on the type of treatment, duration, demographic variations and individual patient experiences [1]. Adult orthodontic patients have been reported to experience discomfort in the use of fixed appliance [1,5,7], hence the current study evaluates

The demographics in this study showed a higher percentage of adult females {73%} seeking orthodontic treatment. This could be due to the perceived treatment benefits of orthodontic treatment by a majority female population [21-23]. The higher prevalence of females assessing orthodontic treatment in this study agrees with the findings of previous studies [2-5]. This finding of an increase in prevalence of females seeking orthodontic treatment, may be due to a higher dissatisfaction of their appearance when compared to their male counterparts [1,2].

Pain and discomfort are significant concerns during orthodontic treatment. The current study noted that orthodontic treatment had a significant impact on functional limitation domain in the first six weeks by affecting participants daily performance especially in form of pain while eating meals and trouble pronouncing words in the first few weeks. These findings are in accordance with those

of previous studies such as Sergl [21]., *et al*, Vyas [22]., *et al*, Zhang [23]., *et al*. and Liu [9]., *et al*. which reported diet limitations and pain sensation as the major complaints for most patients undergoing orthodontic treatment during the initial phase. The most frequently reported significant impacts were discomfort while eating, pain, interruption of meals, trouble pronouncing words and self-consciousness during early weeks of treatment respectively. Similar findings were also noted by Johal[1] whereby a significant negative impact in functional limitations, physical pain, psychological discomfort and physical disability was observed.

In the current study, there was a negative impact for five domains which included functional limitations, physical pain, psychological discomfort, physical disabilities, and psychological disabilities. Social disability and handicap domains were minimally impacted. This could be due to the perceived treatment benefits of orthodontic treatment by a majority female population.

The psychological domain depicted the emotional aspect of orthodontic treatment. Many participants felt self-conscious with twenty six percent of respondents feeling self-conscious "almost always", twenty four percent" mostly", twenty one percent" sometimes" and nine percent" seldom". A similar study carried out by Kang [11]., *et al*. showed that women had an overall lower quality of life than men. Seventy three percent of respondents did not feel embarrassed as adults wearing braces. This was also noted in previous research by Palomares., *et al*. [12].

Respondents in this study, suffered more psychological discomfort in terms of worries about the pending orthodontic treatment outcome with tense feelings and anxiety in the first few weeks of treatment. This finding was also observed in a study done by Liu [9]., *et al*. who also noted that the greatest deterioration of oral health occurs in the early phase of treatment. This finding could be due to an unbalanced distribution of a greater proportion of females in this study.

Most respondents in the current study reported never feeling that life was less satisfying due to wearing braces. Their inability to function totally in daily life was largely unaffected by orthodontic treatment with sixty four percent of respondents reporting" never" totally unable to function because of orthodontic treatment. Similar reports were also noted in a study carried out by Zheng [13]., *et al*.

The overall mean OHIP score in the current study was 20.26 with a standard deviation of 7.083. This score is at variance with other studies such as Vyas [22]., *et al*. that got a OHIP score of 16.0 in the first one month when compared with the baseline before treatment and Ogunsuji [8] who got a OHIP score of 11.12. These findings emphasize the varying experiences and emotional impacts of orthodontic treatment with gender differences in the various domains. The current study noted that in the Psychological Discomfort, Psychological Disability, Social Disability and Handicap domains, females exhibited higher mean scores with 3.52, 4.42, 1.89, and 1.14 respectively while males exhibited lower scores with 2.26, 4.42, 1.14, and 1.14 respectively, with p-values ranging from 0.061 to 0.213. The females experienced a more pronounced impact on psychological and social aspects of oral health related quality of life [4]. This contrasts with a study carried out by Vinta Mary [6] suggesting no difference among gender seeking orthodontic treatment.

This study suggests gender differences in the psychological and social aspects of Oral Health-Related Quality of Life (OHRQoL), This finding is similar to a study reported by Kang and Kang which noted that women show higher OHRQoL scores than men. This information will be useful in helping to manage adult patients' expectations and adaptation during treatment. This study identified significant gender-based disparities in Oral Health Impact Profile [OHIP]scores across various domains. In the Functional Disability domain, both males and females exhibited similar mean scores (2.48 for males and 2.44 for females), with a high p-value of (0.904) suggesting a lack of statistical significance.

Limitation of the Study

Oral health related quality of life is a subjective evaluations of a patient's own experiences and perceptions**.** However, a rising acceptance of the need to evaluate patient- centred measures as a way of improving orthodontists understanding of treatment effect and value is required.

A balanced distribution of either gender should have been done as it would signify the difference of perceptions as it was reported by Kang and Kang that women show higher OHRQoL scores than men. Follow up of the patients after orthodontic treatment would have enabled us to compare the OHIP scores during and after treatment.

Conclusion

Fixed orthodontic treatment appeared to have a more negative impact on the overall OHRQoL among adult patients in LUTH during the first six weeks of treatment. Based on the outcome of this study, it may be important for orthodontist to inform patients prior to treatment that they may experience a temporary deterioration in the overall OHRQoL in the first six weeks of treatment.

Recommendation

It is therefore recommended that further studies comparing other treatment options with fixed appliances and their impact on OHRQOL should be considered. Orthodontists need to explain the possible discomfort and consequences of treatment to adult patients to enhance better adherence to treatment.

Appendix I

Appendix i: Questionnaire on Impact of Oral Health Related Quality of life During Orthodontic Treatment

Functional limitation.

Q1: Did you have trouble pronouncing words since your braces/appliance treatment commenced during the first 6 weeks?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Q2: Did your sense of taste worsened since commencement of your braces treatment during the first 6 weeks?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Q3. Do you feel pain/painful aching in your mouth with your braces/appliance?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Q4. Do you find it uncomfortable eating any food since the commencement of your braces treatment?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

PHYSICAL DISABILITY.

Q5. Do you feel unsatisfied with your diet as a result of your appliance/braces during the first 6 weeks of treatment? OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Q6. Do you have to interrupt your meals because of your appliances/braces treatment? OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Psychological DiscomforT

Q7. Do you feel self-conscious as a result of your braces/appliance?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Q8. Do you feel tense/ anxious of what your treatment outcome will be?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Psychological Disability

Q9. Do you feel uncomfortable/ find it difficult to relax because of your appliance/braces? OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Q10.Do you feel a bit embarrassed because of wearing braces/appliance as an adult? OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Social disability

Q11. Did you feel a bit irritable with other people because of problems with your teeth and your appliance/braces during the first 6 weeks of treatment?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Q12.Did you find it difficult doing your routine job as a result of your appliance/braces during the first 6 weeks of your treatment?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

HANDICAP.

Q13.Do you have the overall feeling that life in general is less satisfying as a result of you wearing appliance braces?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

Q14.Were you totally unable to function as a result of your braces/appliance during the first 6 weeks of your treatment?

OPTION 0: Never

OPTION 1: Seldom

OPTION 2: Sometimes

OPTION 3: Mostly

OPTION 4: Almost always

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