The Psychosocial Impact of Dental Aesthetics on Orthodontics Patients

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Abstract

Patients require orthodontics treatment could come with many reasons such as aesthetic, functional or psychological factors. Some aesthetic reasons are permitted to be treated if it is reasonable and do not against the human norms. To have a normal smile corrected from a crowded or spaced tooth are two examples where orthodontics treatment with braces are permitted. The treatment for dental malocclusion usually will require orthodontic fixed appliances (braces) and counseling as part of the protocol.

This study was done to assess the effect of dental malocclusion and fixed appliances to patients' well-being and the psychosocial impact. The result of this study shows that dental malocclusion has direct negative impact on patient self-esteem and psychosocial. Patients with dental malocclusion tend to have lower self-esteem, reduced confident level and negative self-image.

Introduction

Dental malocclusion is a major concern for many people. Orthodontics treatment to correct dental malocclusion can be costly. For some, appearance is not for self-satisfaction but as a first impression to other people. A first impression is very critical in building human personal relationship. A good first impression can be influence by many factors such as image, communication, facial expression, cloth and even dental appearance. Nowadays, people have position dental aesthetic as the most important element in their life. Dental aesthetic is a subjective matter, which varies in every patient. It may relate to the arrangement of teeth, color of the teeth or the shape of that tooth according to the individual preferences, cultural factor and sociodemographic factor[1]. A proper alignment of teeth might also reflect friendliness, social class, popularity and intelligence than others who have

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dental malocclusion[2]. Improving the dental aesthetics is the main motivational factor for undergoing treatment especially in females which have a high expectation on their look. It is said that, apart from aesthetics concern, women also seek for treatment to bust up their confidence and prevent negative thought caused by their teeth[3].

Dental malocclusion has become a major problem for many countries whereby patients have become more aware about their dental appearance. It has been reported that 74.57% of overall population have dental malocclusion[4]. This chronic condition is not just interfered with normal function and dental appearance, but it affects the social life as well. Thus, it gives a huge impact on individual's physical, social and psychological well-being[4]. About 63% to 67% of parents have requested an early malocclusion treatment for their children to prevent possible desertion in future[5]. As for the children, they are more concern if they got teased from their friend and family[5]. In some countries, early evaluation or treatment of malocclusion have been done to avoid mental health and early detection of stress-related disorder problem[6]. Providing a good environment for the children to grow is very important at this age as they started to build their self-confidence and social interaction skills.

Children with aesthetic-related dental malformation are prone to be harassed and teased. In addition of being irritated by the family members, they were also being bullied in school. This could lead to more serious condition which will develop psychosocial or psychological problem later in life. Psychological distressed often associated with strain, stress and distressed. It will keep the children to feel emotionally unsupported and eventually become depress, that are also one of the factor to be bullied[5,7]. Joseph A. Bailey suggested that self-esteem is the "summary judgment of the collected separate assessments of one's self-meaning, self-identity, self-image and self-concept[8]. As a defense mechanism, victims will pretend that they do not care until it reaches one point that they cannot handle anymore thus this will bring down their self-esteem and total loss of self-confidence.

Apart from that, if the condition of the patient is prolonged, they might isolate themselves from others and could affect their self-esteem. Without having a good social relationship, patients are on risk for depression. Generally, self-conscious can be divided into private self-conscious which correlated to social look anxiety and public self-conscious. According from a study held in 2004, one with high self-conscious would have both social appearance concern and appearance disapproval[9]. This type of person will always take a good care of their appearance in order not to be rejected by the society only because of their look. Thus, the objectives of this study are to investigate the psychological effect of dental malocclusion among orthodontics patients and to assess the impact of dental aesthetics on patients' well-being and daily life.

Materials and methods

Base on sample size calculation, a minimum number of 120 patients were needed in this study. They were asked to answer a set of questionnaires regarding the psychosocial impact of their dental malocclusion towards self-confidence and social impact. A pilot test was done with 50 set of questionnaires prior to the study. In this study, dental aesthetic was found to play an important role in patient's self-confidence and social life[10]. Some modification was done to the questioners to simplified and some words were change so that the questions become clearer.

The sample involved in this study were randomly selected among patients undergoes orthodontics screening in USIM dental clinic. The questionnaire involved is a modification from Psychosocial Impact of Dental Aesthetic Questionnaire (PIDAQ)[11]. In this study a modified version with English and Bahasa Melayu translation were validated and used. Patients with difficulty understanding both languages were assisted. A total of 23 questions were included in this questionnaire. The questioners were divided into several parts such as patient's background, social impact (SI), dental self-confidence (DSI), aesthetic concern (AC) and psychological impact (PI).

Results

A total of 132 questioners were distributed to patients attending USIM dental clinic for orthodontic screening. However only 120 were selected and included in this study and the rest were excluded due to incomplete data and was insufficient to be interpreted. From 120 data collected, only 32.5% were male while 67.5% were female (Table 1). The largest age group in this study were children and teenagers between the age of 10 to 19 years old which form the 56% of total patients. The second largest group was between 20 to 29 years old (40%) and the rest was more than 30 years old group. In this study, around 78% of the patients have dental malocclusion which were in category 4 (need) and 5 (great need) base on the Index of Orthodontics Treatment Need (IOTN). This indicates that patients who came to USIM dental clinic needed some form of orthodontics treatment to be done.

From this study, around 92.6% of total patient wishes that their teeth could looked better and 39.1% feels unhappy about the appearance of their teeth. Some of the example of dental malocclusion that need to be treated are proclination of upper incisors of more than 6mm, moderate spacing of more than 4mm and contact point displacement between two teeth of more than 4mm. Furthermore, a total of 49.2% does not feel proud of their teeth, 48.3% does not like to show their teeth when smile and 54.2% does not pleased to see their teeth in the mirror. Apart from that, 55% does not feel that their teeth were

attractive to other people, 63.3% were not satisfied with their teeth appearance and 74.2% feel that their teeth position were not nice. Around 42.5% hide their teeth during smile, 51.7% concern about what people might think about their teeth, 55% afraid that people could make offensive remarks regarding their teeth and 37.5% feel that sometimes they think that people were staring at their teeth (Table 3).

Although, dental malocclusion has detrimental effects on patient self-esteem, around 70.8% felt that it does not inhibited their social well-being and 57.5% does not distressed when see other people's teeth, 43.3% does not feel bad thinking about their teeth appearance and 58.3% does not feel the need to cover their mouth to hide their teeth. However, 51.7% felt irritated when other people make bad remarks on their teeth, 52.5% worry about opposite sex opinion on their teeth and 68.4% envy of other people nice teeth. About 61.5% felt that other people they knew have nicer teeth than them. Around 34.2% does not like to see their teeth in photographs, 28.3% does not like to see their teeth at video of them self and 41.7% does not like to see their teeth in the mirror.

Statistical analysis was done using Test of Homogeneity of Variances, ANOVA and Descriptive Analysis. The test of Homogeneity of Variances was done between the four subdivision of questions in the questionnaire as shown in Table 3. ANOVA was also used to test between and within each group. The result show that there were no significant different ($p > 0.05$) as shown in Table 4. Apart from that, Descriptive Analysis was tabulated in Table 5.

No.	Questions in summary	Yes n (%)	No n (%)	Unsure n (%)
1	Difficulties pronouncing words	46 (45.1)	54 (52.9)	2 (2.0)
2	Worsening taste sensation	10(9.8)	91(89.2)	1(1.0)
3	Pain in the mouth	76(74.5)	24(23.5)	2(2.0)
4	Difficulties in eating	78(76.5)	24(23.5)	0(0.0)
5	Reduce self esteem	26(25.5)	72(70.6)	4(3.9)
6	Feeling tense	18(17.6)	82(80.4)	2(2.0)
7	Unsatisfactory diet	18(17.6)	80(78.4)	4(3.9)
8	Meal routine interrupted	42(41.2)	59(57.8)	1(1.0)
9	Unable to rest	28(27.5)	72(70.6)	2(2.0)
10	Feeling embarrass	12(11.8)	87(85.3)	3(2.9)
11	Uncomfortable to others	7(6.9)	92(90.2)	3(2.9)
12	Disturbed daily work	17(16.7)	85(83.3)	0(0.0)
13	Depression with life	11(10.8)	88(86.3)	3(2.9)
14	Unable to function	8(7.8)	92(90.2)	2(2.0)

Table 2. List of questions and the percentage of answer.

	Levene Statistic	df1	df2	Sig.
DSC	1.280	4	115	.282
SI	.603	4	115	.661
PI	.442	4	115	.778
AC	1.899	4	115	.115
DSCSIPIAC	.381	4	115	.822

Table 3. Test of Homogeneity of Variances.

		Sum of Squares	df	Mean Square	F	Sig.
DSC	Between Groups	3.929	4	.982	1.355	.254
	Within Groups	83.358	115	.725		
	Total	87.287	119			
SI	Between Groups	1.927	4	.482	.563	.690
	Within Groups	98.495	115	.856		
	Total	100.422	119			
PI	Between Groups	3.846	4	.962	1.204	.313
	Within Groups	91.820	115	.798		
	Total	95.666	119			
AC	Between Groups	1.404	4	.351	.256	.906
	Within Groups	157.693	115	1.371		
	Total	159.096	119			
DSCSIPIAC	Between Groups	1.379	4	.345	.930	.449
	Within Groups	42.639	115	.371		
	Total	44.018	119			

Table 4. ANOVA between and within groups.

Variable	10 to 19 n (%)	20 to 29 n (%)	30 to 39 n (%)
Gender			
Male	12 (12%)	4 (4%)	1 (1%)
Female	38 (37%)	39 (38%)	8 (8%)
Race			
Malay	40 (39%)	41 (40%)	9 (9%)
Chinese	9 (9%)	2 (2%)	0 (0%)
Indian	1 (1%)	0 (0%)	0 (0%)

Table 1. Demographic characteristics in three age groups.

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
DSC	1	2	1.25000	1.532065	1.083333	-12.51506	15.01506	.167	2.333
	2	13	1.87179	.612954	.170003	1.50139	2.24220	.667	2.667
	3	13	1.48718	.780140	.216372	1.01575	1.95861	.167	2.500
	4	74	1.32658	.872565	.101434	1.12442	1.52873	.000	3.833
	5	18	1.23148	.895046	.210964	.78639	1.67658	.167	3.000
	Total	120	1.38750	.856448	.078183	1.23269	1.54231	.000	3.833
SI	1	2	1.43750	1.502602	1.062500	-12.06284	14.93784	.375	2.500
	2	13	2.26923	.915500	.253914	1.71600	2.82246	.875	3.375
	3	13	1.97115	.813547	.225637	1.47953	2.46278	.375	3.500
	4	74	1.92061	.936917	.108914	1.70354	2.13767	.000	4.000
	5	18	2.00000	.912535	.215087	1.54621	2.45379	.125	3.875
	Total	120	1.96771	.918630	.083859	1.80166	2.13376	.000	4.000
PI	1	2	3.33333	.942809	.666667	-5.13747	11.80414	2.667	4.000
	2	13	2.66667	.889757	.246774	2.12899	3.20434	1.000	3.667
	3	13	2.25641	.968522	.268620	1.67114	2.84168	.000	3.833
	4	74	2.36486	.844751	.098200	2.16915	2.56058	.333	4.000
	5	18	2.17593	1.031327	.243086	1.66306	2.68879	.500	3.833
	Total	120	2.37361	.896616	.081849	2.21154	2.53568	.000	4.000
AC	1	2	2.66667	.471405	.333333	-1.56873	6.90207	2.333	3.000
	2	13	2.20513	.986374	.273571	1.60907	2.80119	.667	4.000
	3	13	2.41026	.963730	.267291	1.82788	2.99263	1.333	4.000
	4	74	2.12613	1.234589	.143518	1.84010	2.41216	.000	4.000
	5	18	2.14815	1.172797	.276431	1.56493	2.73137	.000	4.000
	Total	120	2.17778	1.156263	.105552	1.96877	2.38678	.000	4.000
DSCSIPIAC	1	2	2.17188	1.112220	.786458	-7.82103	12.16478	1.385	2.958
	2	13	2.25321	.576965	.160021	1.90455	2.60186	1.365	2.990
	3	13	2.03125	.574650	.159379	1.68399	2.37851	1.052	2.854
	4	74	1.93454	.591020	.068705	1.79762	2.07147	.573	3.073
	5	18	1.88889	.683655	.161139	1.54892	2.22886	.448	3.000
	Total	120	1.97665	.608195	.055520	1.86671	2.08659	.448	3.073

Table 5. Descriptive analysis between groups.

Discussion

The PIDAQ questionnaire was developed to assess orthodontics patients on certain aspect of quality of life[11]. The questionnaire has been adapted and used in many studies worldwide and translated in varies languages such as Spanish, Chinese and Italian[12,13,14]. This questionnaire has been recommended to be use as tool to assess the quality of life in orthodontics patients[15].

In this study, almost all patient (91%) who came for orthodontics screening were Grade 3 (borderline need) to 5 (very great need) base on Index of Orthodontics Treatment Need. This indicate that, there were some degree of dental malocclusion which needed orthodontics intervention. This in turn, resemble the result, whereby almost 93% patient wish to have better looking teeth. However, in two similar studies involve PIDAQ questioners, only 30% to 50% of the total sample, were in Grade 3 to 5[16,17]. This could be because the studies were conducted in a local university involved undergrad student only. Compare to this study, all samples were patients seeking treatment in orthodontics clinic. Thus, higher degree of dental malocclusion was expected in this sample group. Furthermore, female make the predominant group in this study and more than half (56%) were below than 19 years old. This result is similar to other studies done[18,19] where female and young adults make the most majority. This could be because of female were more desire for treatment and more concern regarding their dental appearance[20]. Apart from that, the cost of treatment which were affordable to this group of patients were the main reason why young adult request treatment in USIM dental clinic.

In dental self-confident segment, more than half of patients have low self-confident and do not like the appearance and the alignment of their teeth. This could be due to anterior crowding, diastema, overjet or anterior malocclusion which could be visible when patient smile. Dental malocclusion worsen by periodontal condition in anterior region is consider a major problem in certain gender[21]. Almost half of patients (48%) does not like to show teeth when smile. Many studies have shown that dental malocclusion could affected self-confident in patients. A person with low dental aesthetics will have lower self-esteem[22]. Interestingly, this patient tends to have higher expectation and

level of perfectionism according to the same study[22]. The treatment plan should be discussed with patient before the start of treatment to avoid any misconception or unrealistic expectation. In social impact segment, almost all patients feel that dental malocclusion inhibits them to have social contact. This again, related to their low self-esteem that might prevent them to have a conversation and interaction with other people. In one study, untreated dental malocclusion was found to significantly affects patient well-being, avoidance to participate in social activities and underperform in academic[23]. In a positive tone, in this study, more than half patients were not bother regarding other people opinion regarding their teeth, make offensive remarks or joke about their teeth. This could be because most of the patients are in young adult age group and mature enough to ignore any nasty comment.

In psychological impact segment show that more than 57% reported distressed when they see other people's teeth and 61% think other people have nicer teeth. This negative thought is detrimental for patient psychological health. Although dental malocclusion is a deviation of normal occlusion, it could affect the appearance of a person and have negative impact on patient well-being. Dental malocclusion such as overjet and spaced dentition were known to affect the quality of life in children's and affected their family[24]. Some young children can get tease and bullies in school because of their unattractive dental appearance. However, the negative psychological effect is not permanent and can be reversed when the dental condition being treated. A study by Deborah and her team in 2014 reveals that aesthetics dental treatment could able to restore children self-esteem and confidence[25]. These children will be able to socialize better at school or home environment and reduce the incident of bullying[25]. This is a valid reason to provide an affordable dental treatment to young school children so that they could have positive mind state to grow. Lastly, aesthetic concern reveals a mixed response from patients. Less than half (37.5%) like to see their teeth in mirror, however almost half (45.8%) like to see their teeth in photograph and half patient (49.2%) like to see their teeth in video. The higher percentage in photograph and video might be due to popularity of social media. The new generation especially the young adults were likely to post either in Facebook, Instagram or Myspace. In this media, they could select the best picture and video to upload. Sometimes, they could enhance the picture using application to boost their image. The relation between social media and self-esteem was explored by a study done as early in 2007. They found that social media could improve and give greater benefits for a person with low life satisfaction and low self-esteem[26].

Conclusions

In conclusion, this study has demonstrated the detrimental effects of dental malocclusion towards patient psychosocial and well-being. Moderate to severe dental malocclusion could reduce patients' self-esteem and confidence level in daily life. Orthodontics treatment to correct the dental malocclusion should be made available to prevent this problem from escalate further. Fund and manpower should be made accessible to patients who seek dental treatment because the negative psychosocial impact is real and should be prevented.

Declaration of Interest

Authors have declared that they have no conflict of interest in this study.

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