SELF-PERCEPTION OF MALOCCLUSION OF SAUDI PATIENTS USING THE AESTHETIC COMPONENT OF THE IOTN INDEX

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ABSTRACT

The purpose of the study was to assess the self-perception of patients toward their dental appearance using the Aesthetic Component (AC) of IOTN index compared with an investigator's rating and whether age and gender had any influence. A sample of 371 patients was selected from patients seeking orthodontic treatment in Dammam Central Hospital. The sample was divided into two age groups, adolescents and adults and the Aesthetic Component of the IOTN Index was applied. The results showed that patients scored themselves as having an attractive dentition with no need for orthodontic treatment (45.3%). The highest investigator's scoring revealed that 46 % of the patients were in grade 3-4 indicating a slight need for orthodontic treatment. There was a significant difference between the professional and the patient's rating ($p<0.05$). Further, the gender and age did not influence the self-perception.

Key words: *Self-perception, the Aesthetic Component (AC), IOTN Index.*

INTRODUCTION

Acceptable physical appearance, including the dentition is an important aspect of human self-esteem. Further, well-aligned teeth and a pleasing smile reflect positively at all social levels. While irregular or protruding teeth reflect negatively. Most people undergo orthodontic treatment to improve their dental appearance; indeed, their major desire is usually related to aesthetics, and to look attractive for self-esteem.[1-3] A number of studies showed that children have developed a self- perception for the need of orthodontic treatment.[4-10]

Although dissatisfaction with dental appearance is broadly related to occlusal irregularities,[11-13] there are differences in the recognition and evaluation of the dental features.[14,15] It has been suggested that gender; socio-economic background and age as factors playing a role in the self-perception of dental appearance.[16-18] In contrast, other studies found self-perception of dental attractiveness and treatment need were similar irrespective of gender, age or social background.[4,13]

Studies revealed that people seem aware of their malocclusion trait, but they do not perceive a need for treatment to the same extent as a dentist or an orthodontist.[8,15,19] Abu Alhaija[8] found a weak correlation between the examiner rating and student's self perception. Alternatively, Abdulla[14,15] in two studies reported that children and parents perception were much lower than those of the orthodontist when the assessment of malocclusion was compared.

Recently, many occlusal indices have been developed to classify the malocclusion and categorize the treatment need into groups. These indices were designed for financial, political and administrative purposes.[1] The index of orthodontic treatment need (IOTN) is used by the Swedish Dental Health Board[20] and it has two components, a dental health component[21] (DHC) and an aesthetic component[22] (AC), which record the impact of aesthetic impairment of the dental

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appearance to the individual. This was achieved by comparing patient's dental appearance against photographs.

However, data concerning the self-perception of malocclusion and the need of orthodontic treatment are available for many populations[4-19]. Only a few studies have addressed the perception of malocclusion in a Saudi population.[23-25] The aims of present study were to:

- Assess the self-perception of dental appearance among Saudi patients using aesthetic component (AC) of the IOTN index.
- Compare the perception of dental appearance between the investigator and the patient.
- Determine if gender and age influence patient self-perception and investigator's rating.

MATERIALS AND METHODS

This study was conducted in Dammam Central Hospital on consecutive Saudi patients seeking orthodontic treatment. The selected age for the survey was ≥ 12 years which produced a sample size of 371 patients (330 females, 41 males). The patients were further divided into two groups of 12-16 years (youths or adolescents) and >16 years (adults).

The Aesthetic component (AC) of orthodontic treatment need index was used[22]. It has a scale based on a series of 10 colored photographs of anterior teeth numbered 1-10, which represent a range of deteriorating dental aesthetics. Photograph 1, represents the most attractive dentition, to photograph 10, representing the least attractive. The grades of photographs indicate four treatment categories:

Grade 1-2	no treatment need
Grade 3-4	mild need
Grade 5-7	moderate need
Grade 8-10	severe need

The patients were seated and examined under standardized lighting conditions. Each patient's anterior teeth were evaluated and a recording was made of the photograph, which most closely resembled the state of their dental appearance.

Following the operator's examination, self-perception of malocclusion was assessed. Each patient was asked to self assess their dental appearance and rate according to the number of the photograph which most closely matched the attractiveness of their own teeth.

The results were processed and statistically analyzed. The significance level was set at the 5 % level of confidence. A Chi square test was utilized to investigate the difference between the examiner's rating and patient's self perception.

RESULTS

Table 1 shows the sex and age distribution of the sample. The frequency distributions of the females and males were 88.9% and 11.1% respectively. Adolescents had higher representation of the sample (73.6%) than adults (26.4%).

Table 2 displays the total sample and the scores for the aesthetic component (AC) of the IOTN index as allocated by the investigator and the patient. The highest investigator's scoring in descending order revealed that 46 % of the patients were in (AC) grade 3-4 indicating a slight need for orthodontic treatment, 24.5% of the patients had a moderate need (grades 5–7), 12.9% of the patients had a severe need (grades 8–10), and 10.2% of the patients had no need for orthodontic treatment (grades 1-2).

In contrast, when the patients were asked to score their own dental appearance, the highest distribution

TABLE 1: DISTRIBUTION OF SEX AND AGE

Sex / Age	12 - 16 years N (%)	> 16 years N (%)	Total N (%)
Female	247 (74.8)	83 (25.2)	330 (88.9)
Male	26 (63.4)	15 (36.6)	41 (11.1)
Total	273 (73.6)	98 (26.4)	371

TABLE 2: DISTRIBUTION OF IOTN (AC) GRADES AS ALLOCATED BY THE INVESTIGATOR AND THE PATIENT. (TOTAL SAMPLE)

Treatment need	AC grade	Investigator	Patient
		N (%)	N (%)
No need	1	8 (2.2)	93 (25.1)
	2	30 (8.1)	75 (20.2)
	Subtotal	38 (10.2)	168 (45.3)
Slight need	3	67 (18.1)	55 (14.8)
	4	105 (28.3)	53 (14.3)
	Subtotal	172 (46.4)	108 (29.1)
Moderate need	5	50 (13.5)	14 (3.8)
	6	33 (8.9)	10 (2.7)
	7	8 (2.2)	4 (1.1)
	Subtotal	91 (24.5)	28 (7.5)
Severe need	8	29 (7.8)	20 (5.4)
	9	10 (2.7)	6 (1.6)
	10	9 (2.4)	1 (0.3)
	Subtotal	48 (12.9)	27 (7.3)
Unregistered cases	11	22 (5.9)	40 (10.8)

(45%) of the patients scored their teeth as aesthetically acceptable indicating no treatment need (grade 1-2), 29.1% of the patients (grade 3-4), 7.5% of the patients (grade 5-7), and 7% of the patients had a severe need for orthodontic treatment (grade 8-10). In addition, 5.9% and 10.8% of the patients were recorded by the investigator and the patient respectively as unregistered cases as they could not be categorized in any of these grades such as Class III cases. The difference in the scoring between the investigator and the patient was highly significant ($p<0.05$). The kappa value (7.6%) was very low indicating a weak agreement between the investigator and the patient's recording for each category of the treatment.

The AC scoring between the investigator and female adolescent patients is shown in figure 1. The highest percentage (46.2%) was scored by the female adolescent patients as they considered their dental appearance attractive with no need for orthodontic treatment (grade 1-2) whereas the investigator recorded 8.1% of the patients in similar treatment need, which was the least percentage in AC scale. In contrast, the investigator scored (48.2%) of the patients in AC grade (3-4) indicating slight need for treatment, whereas the patient's perception was 27%.

Figure 2 showed the proportions of the investigator and female adult patients who believed themselves (44.6%) in the no need category of orthodontic treatment according to AC grade 1-2, whereas the investigator recorded 18% of patients in this AC range. However, the highest percentage was scored by the investigator was (51.8%) in AC grade 3-4 indicating a slight need for treatment, whereas the patients scored themselves 37.3%.

AC grades were illustrated in figure 3 for the investigator and male adolescent patients who had a more favorable view of dental appearance than did the investigator. The investigator scored (42.3%) of patients in grade 8-10, indicating a severe need for treatment, whereas none of the patients considered themselves to be in this range. 34.6% of the patients scored themselves in 1-2 grade, no need treatment and 7.7% were scored by the investigator in the same category.

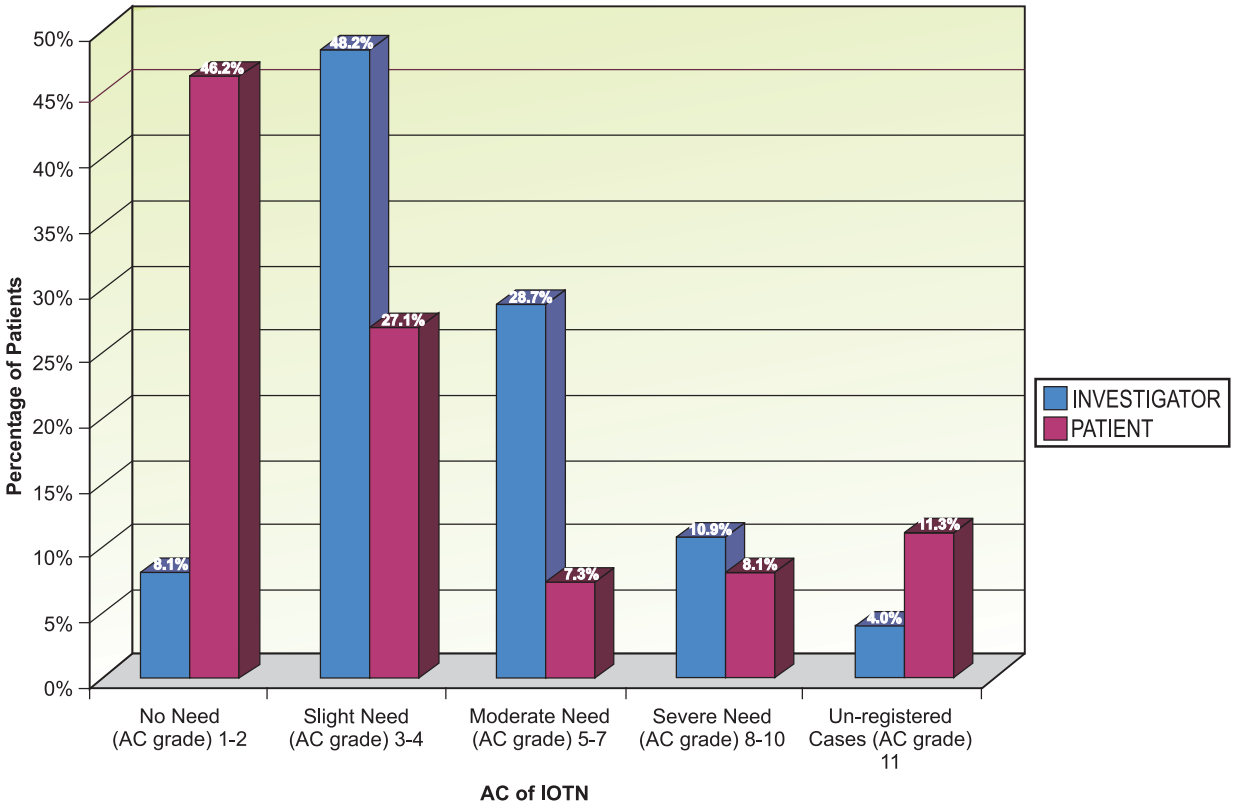

Fig. 1: Distribution of IOTN (AC) grades as allocated by the investigator and patient for females of 12-16 years old

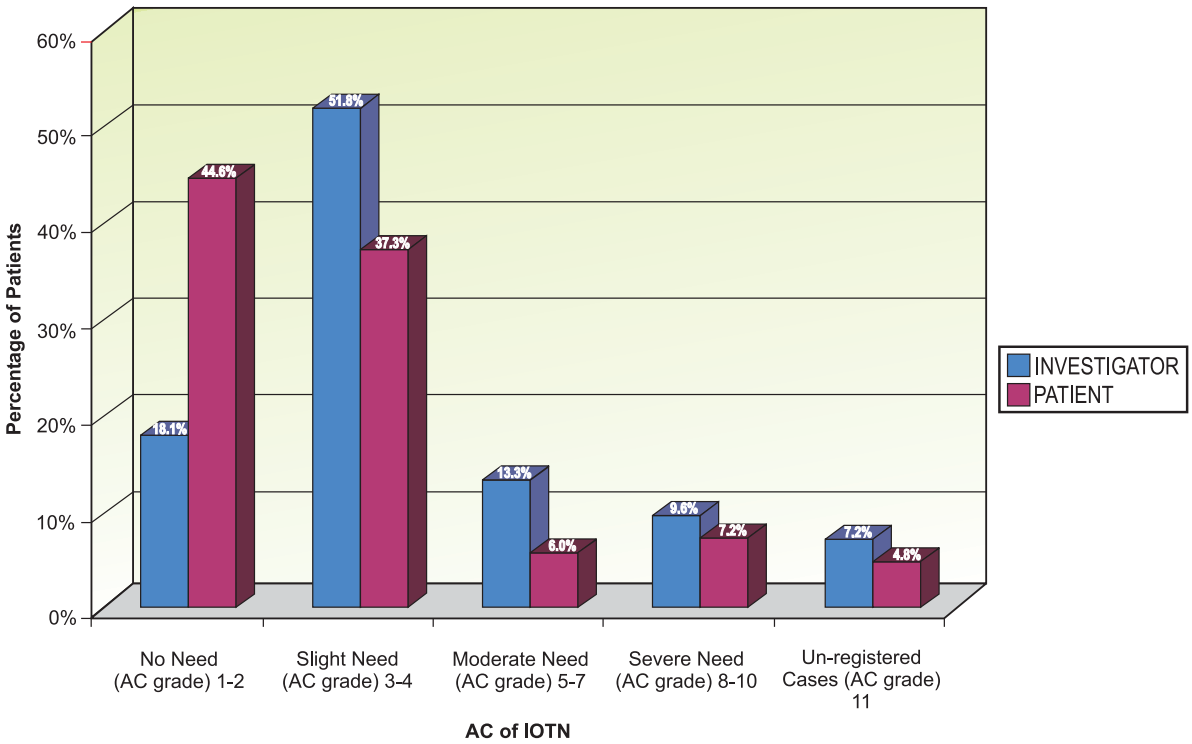

Fig. 2: Distribution of IOTN (AC) grades as allocated by the investigator and the patient for females >16 years old

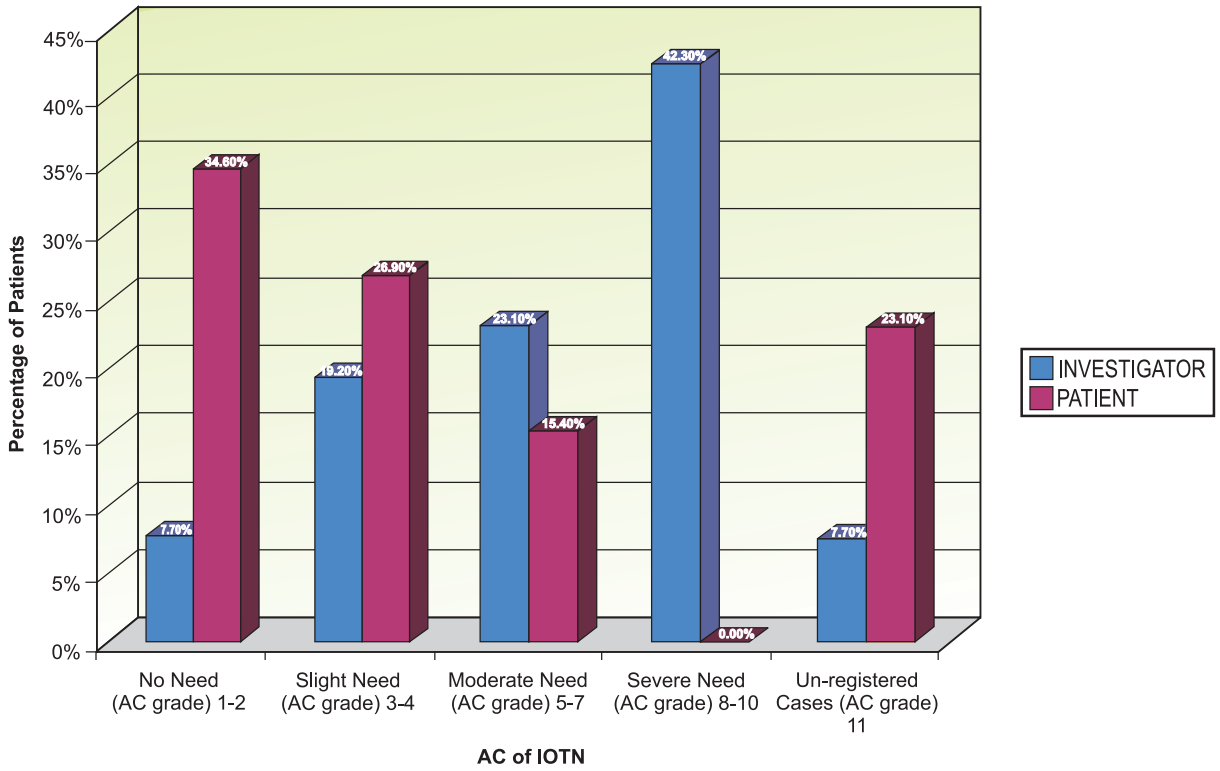

Fig. 3: Distribution of IOTN (AC) grades as allocated by the investigator and the patient for males of 12-16 years old

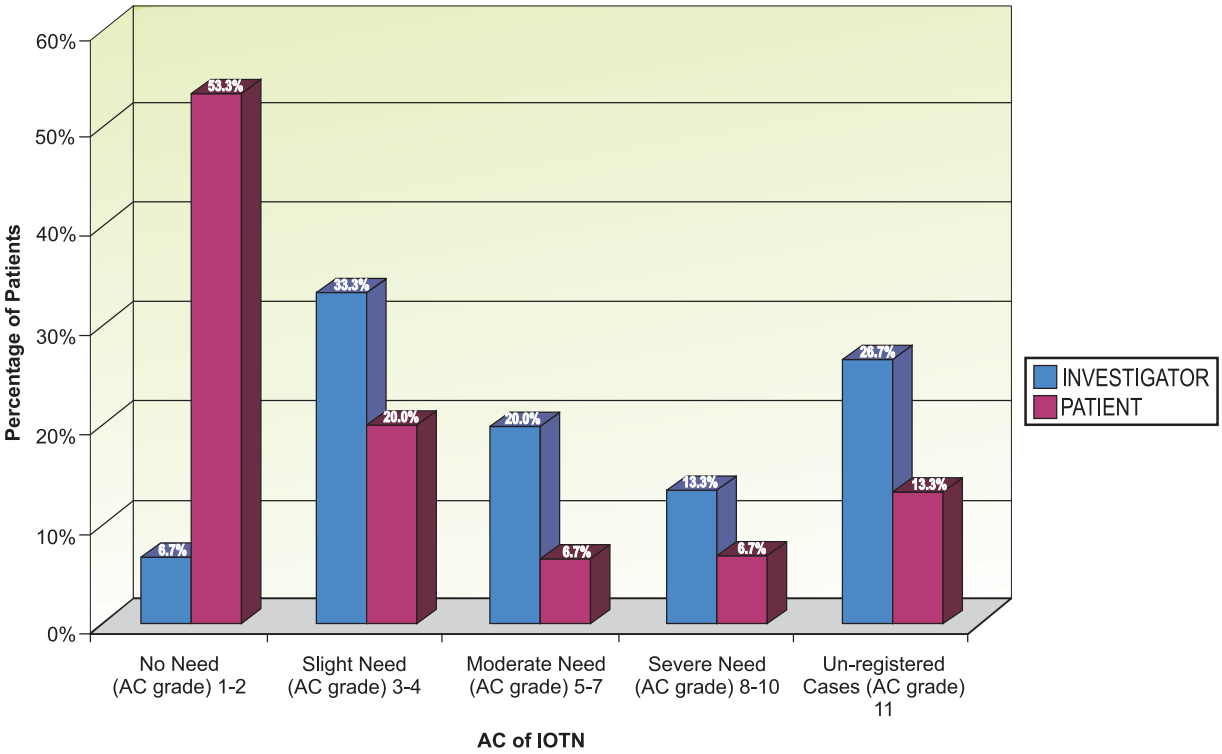

Fig. 4: Distribution of IOTN (AC) grades as allocated by the investigator and the patient for males > 16 years old

The investigator and male adult patient's rating in figure 4 revealed that the highest percentage was scored by the investigator (33.3%) in AC grade 3-4 indicating a slight need for treatment. On the other hand 6.7% recorded by the investigator in the AC grade 1-2 which was the lowest percentage.

DISCUSSION

Dammam Central Hospital is located in the Eastern region of Saudi Arabia. Patients seeking orthodontic treatment are of both sexes; including preadolescence, adolescence and adults. The selected sample was divided into two age groups, adolescents and adults, starting from age 12 years at which the time permanent teeth had erupted and orthodontic treatment may commence.

The main difference between the number of female and male patients seeking orthodontic treatment may indicate that the level of awareness and interest in orthodontic treatment is higher in females than in males which is not similar to the observation of AlBalkhi and AlZahrani[26] who found lack of any significant difference between both genders.

The majority of patients who attended for orthodontic treatment were adolescents which may indicate that the adolescents were concerned about their appearance. The small percentage of adult patients who seek orthodontic treatment could be explained, either by the fact that adult patients are less concerned about the negative aesthetic aspect of their dental appearance, and their need for orthodontic treatment or that older patients are not frequently referred for orthodontic treatment, as AlBalkhi and AlZahrani[26] suggested.

The assessment of the aesthetic need for orthodontic treatment is complex, and that was clearly seen by the discrepancy in the opinion of dental attractiveness between the professional person and the patient's perception as seen in table 2. The results also indicate that patients tend to rate their dental appearance on the aesthetic scale lower than the examiner rating which could mean that patients are able to recognize the AC pictures in the designated descending order of attractiveness to unattractiveness, which would account for their scoring 45.3%, 29.1%, 7.5%, and 7.3% respectively. This result was consistent with the previous studies,[3,7,14,15] which found that adolescents gave lower ratings to various features of malocclusion than the orthodontist.

However, the highest percent of the patient's perception 45.3% was more than four times as many subjects in the AC grade (1-2) which indicated no need for treatment compared with the investigator (10.2%). It is possible that subjects replied defensively and subconsciously trying to allocate themselves to the attractive side in order to avoid treatment. Alternatively since each picture shows the dentition only from the front, it is possible that the patients could not differentiate between some features of malocclusion as increased overjet and deep bite and subsequently they could not score.

In this study, it appeared that the age and gender of the patients did not influence in the perception of their own dentition. The female and male patients of both age groups had the tendency to score their dental appearance more favorably and allocate themselves towards the more attractive end of the scale (grade 1-2) compared with the investigator (grade 3-4). However, the investigator placed the main sample of adolescent males (figure 3) in categories 8-10 which reflected a severe need for orthodontic treatment. When the patients were asked to make a similar evaluation, none of the patients agreed with the same treatment category. It is obvious that patients of both age groups and genders had less critical self perception regarding the aesthetics of dental appearance than the investigator, and especially, the male adolescent patients were the least critical group. This result could be explained by the fact that patients who have no motivation for treatment or desire to feel attractive could be referred from other specialty areas of dentistry for orthodontic treatment. The influence of gender and age on self-perception of dentition in this study confirms those reported by Abdulla and Rock[14,15], and Birkeland et al[27] who noted the differences in the perception of dental attractiveness between orthodontists and the subjects. Shaw et al[28] also found that orthodontists were likely to be more critical of dentition than the society. This finding was not supported by Abo Alahaija[10] who stated that gender and age affect the self-perception of dentition.

There were indeterminate cases in the present sample detected more frequently by the patients more than the orthodontist. It might be that patients could not estimate the malocclusion and subsequently could not classify the teeth in any of these grades. Further, it is likely that the IOTN is not sensitive enough to account for all types of malocclusion as Class III, open bite, crossbite and scissors bite.

CONCLUSIONS

1. The majority of the orthodontic patients were of the young age group and more specifically the females.

2. The AC showed that the highest investigator's scoring revealed that 46 % of the patients were in (AC) grade 3-4 indicating slight need for orthodontic treatment,

3. The highest percentage of the patients rated themselves on the attractive end of the scale within category 1-2, indicating no orthodontic treatment need.

4. There was a significant discrepancy of dental attractiveness between professional assessment and patient's perception.

5. Gender and age did not appear to influence the self-perception.

6. The significant disadvantages of AC are its lack of sensitivity regarding malocclusion types.

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