

Correlation between self-perception of need for orthodontic treatment in pregnant women and the perception of oral health professionals.

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Abstract: Objective: To determine the correlation between the self-perception of need for orthodontic treatment in pregnant women and the perception of oral health professionals. Material and methods: a cross-sectional study was conducted with a sample of 30 pregnant women, whose self-perception of the need for orthodontic treatment was assessed through the aesthetic component of the Index of Orthodontic Treatment Need (IOTN). A panel of oral health professionals (OHP) composed by a dental surgeon and an orthodontist also evaluated the aesthetic perception for each pregnant woman, independently, using the same method. The correlation between the IOTN scores was evaluated using the Spearman's rank correlation coefficient and the resulting correlations were compared by the Eid-Gollwitzer-Schmidt significance of correlations test. Results: A moderate-positive, statistically significant correlation was found between the IOTN of the pregnant women and those of the dental surgeon (0.507, $p=0.004$) and of the orthodontist (0.451, $p=0.013$). Between the dental surgeon and the orthodontist, the correlation was very high-positive and statistically significant (0.957, $p<0.001$). The OHP panel reported greater correlation than those involving the pregnant women ($p<0.001$). Conclusion: the perception of pregnant women of the need for orthodontic treatment increased moderately similar to the perception of the OHP. The pregnant women showed less consistency in their perception than the OHP, demonstrating low awareness of need for orthodontic treatment by pregnant women.

Keywords: *Self perception; orthodontics, index of orthodontic treatment need; pregnancy.*

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INTRODUCTION.

The need for orthodontic treatment is defined by a set of conditions that determine whether an individual should receive orthodontic treatment.¹ The perception of such need varies from person to person,² as such numerous indexes have been developed, such as the Index of Orthodontic Treatment Need, which is one of the most used indexes in the literature, particularly its aesthetic component (IOTN-AC),^{1,3} whose reproducibility and validity over time have been demonstrated in several countries.^{4,5}

A specific group of adults who may require orthodontic treatment are pregnant women, in whom malocclusion could act as a potential source of bacterial plaque, which, added to a lack of awareness about oral health problems, could aggravate inflammatory reactions observed during pregnancy.⁶

The perception of need for orthodontic treatment may vary, even in relation to self-perception. Salih *et al.*,⁷ reported that the perception and self-perception of need for orthodontic treatment presented differently among individuals of different ages. Livas *et al.*,² in a systematic review, concludes that the current scientific evidence shows a highly variable association between the self-perception of need for orthodontic treatment and the evaluation performed by orthodontists.

However, there are no studies in this area regarding pregnant women. There is a need also to generate indicators on the perception of the need for orthodontic treatment in vulnerable groups⁸ such as pregnant women, with the purpose of having referents when carrying out improvement projects related to orthodontics.⁹

The purpose of this study was to determine the correlation between the self-perception of need for orthodontic treatment in pregnant women with the perception of oral health professionals, and to compare the resulting correlations.

MATERIALS AND METHODS.

Study sample

The present cross-section study was carried out in a sample of 30 pregnant women between the ages of 17 and 36 years (24.93 ± 6.55 years) with a gestational age between 4 and 40 weeks (22.23 ± 11.15 weeks), attending the *Aranjuez Health Center, in Trujillo, Peru*.

Sample size was calculated using the formula for correlation studies, employing a correlation of 0.50 as reported in scores obtained from a pilot study of the IONT, considering a statistical power of 80% and a confidence level of 95%.

The following were considered as inclusion criteria: pregnant woman in good physical and psychological health, with dentition at least until the first molars. Exclusion criteria were: pregnant woman receiving or having received orthodontic, ortho-surgical or previous orthopedic treatment, presence of large visible caries in the frontal plane, and presence of prostheses that affect the vestibular surfaces.

The research protocol for this study was approved by the *Research Committee of the Trujillo Health Network, La Libertad, Ministry of Health Peru No. 24823*.

Informed consent was signed by each participating pregnant woman.

Rating the perception of need for orthodontic treatment

The perception of need for orthodontic treatment was rated through the IOTN-AC,¹ consisting of a set of ten frontal images of malocclusions ordered according to their severity.

Each pregnant woman looked at these images to identify the one most similar to her own teeth. Labial retractors were used to show the teeth of each pregnant woman, in such a way that the upper and lower teeth could be shown in occlusion up to, at least, the first molars.

Each pregnant woman visualized her own teeth in a frontally located mirror while wearing the retractors. After observing her own teeth in the mirror, each pregnant woman judged her need for orthodontic treatment, giving herself a score between 1 and 10 according to the degree of similarity to each of the 10 original IOTN pictures.

A panel of oral health professionals (OHP), consisting of a dentist and an orthodontist, independently evaluated the need for orthodontic treatment of each pregnant woman on the same day, using the same method. Each professional observed directly the dentition of the pregnant woman with the retractors on and rated the need for treatment at that moment, also using scores from 1 to 10.

Error of the method

The error of the method was evaluated by reassessing 15 pregnant women after two weeks. To determine the concordance in the measurements, the Intraclass Correlation Coefficient was used, resulting in a correlation of 0.995 (CI 95%: 0.985-0.998; $p < 0.001$).

Statistical analysis

The data was processed using the statistical program Stata version 13 (StataCorp LP, College Station, Texas, USA). The correlation between the perception scores was evaluated using the Spearman's rank correlation coefficient. The resulting correlations were compared using the Eid-Gollwitzer-Schmidt significance of correlations test. A level of insignificance of 5% was considered.

Table 1. Correlation between the perception of need for orthodontic treatment of pregnant women and oral health professionals.

Correlation number	Groups	r	Confidence interval 95%	p-value
1	Pregnant Women	0.507	0.180-0.733	0.004
	Dentist			
2	Pregnant Women	0.451	0.108-0.698	0.013
	Orthodonticist			
3	Dentist	0.957	0.911-0.980	<0.001
	Orthodonticist			
Comparison between correlations*				
Correlation 1 with 2				0.395
Correlation 1 with 3				<0.001
Correlation 2 with 3				<0.001

* : Eid-Gollwitzer-Schmidt significance of correlations test. r : Spearman's rho (Spearman's rank correlation coefficient).

RESULTS.

A statistically significant moderate-positive correlation was found between the perception of the need for orthodontic treatment of pregnant women and the dental surgeon ($r=0.507$, $p=0.004$) and with the orthodonticist ($r=0.451$, $p=0.013$); among the latter the correlation was very high-positive statistically significant ($r=0.957$, $p<0.001$). When comparing the correlations, the OHP panel reported greater correlation than those that involving pregnant women ($p<0.001$). (Table 1)

DISCUSSION.

It has been previously shown that lack of awareness about oral health problems can worsen the inflammatory reactions observed in pregnant women.⁶ The presence of malocclusion could also be a potential source of plaque retention. On the other hand, there is a highly variable association between the perception of the need for orthodontic treatment of patients and orthodontists.² However, no indicators have been reported regarding the perception of the need for orthodontic treatment in this vulnerable group.

In the present study, a moderate-positive correlation was found between the self-perception of the need for orthodontic treatment in pregnant women and the perception of oral health professionals. These results indicate that the perception of the need for orthodontic treatment of pregnant women increases moderately, in

a similar way to the perception of the dentist and the orthodontist.

To interpret the results found more objectively, the correlations reported were compared, finding that the correlation between the OHP scores was much higher than those that involved the pregnant women's perceptions. These results show a lower consistency between the self-perception of the pregnant women in comparison to that of the OHP. This finding shows that there would be a low awareness of the need for orthodontic treatment by pregnant women. Such results confirm those reported by Mukherjee *et al.*,¹⁰ who found the existence of a lack of awareness about oral health problems in patients who are pregnant, some of whom even decide to seek orthodontic treatment at this stage.

The lower estimated correlation regarding pregnant women could be due to the influence of other concerns inherent to the pregnancy, which could distract the women of their real perception of their need for orthodontic treatment, and probably also in the perception of other oral cavity conditions. Johnson *et al.*,⁹ suggests incorporating protocols for pregnant women to the oral health services in order to improve results in this area, and promoting a better partnership between midwives and dentists, focused on improving the oral health of pregnant women and also that of their future babies.

The dispersion of the studied group and the small

sample size, which did not allow to group the pregnant women by gestational age or by the presence or absence of gingival inflammation, could be limitations of the present study. However, it is the first time that results have been reported with an approach of this nature, outlining how the perception of the need for orthodontic treatment varies between pregnant women and the most qualified oral health professionals. Such information should be viewed as an invitation to reflect about the priorities in the field of oral health of pregnant women, who attend different healthcare facilities. Finally, more studies are

needed to help better understand the malocclusion-pregnancy relationship and its implications for the health of the mother and her future children.

CONCLUSION.

The perception of pregnant women of need for orthodontic treatment increased moderately similar to the perception of OHP. Pregnant women showed less consistency in their perception than the OHP, which indicates a low awareness of the need for orthodontic treatment by pregnant women.

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