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Relationship between normative and self-perceived criteria for orthodontic treatment need and satisfaction with esthetics and mastication in adolescents

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Introduction: Orthodontic treatments are performed to improve esthetics and masticatory functions. In general, clinical criteria are used to recommend such treatments without considering the opinion of the patient. This study aimed to evaluate the relationship between technically defined orthodontic need (normative criteria) and the need for treatment perceived by adolescent patients. **Methods:** A total of 215 students aged between 15 and 19 years were selected and asked to respond to a questionnaire concerning their perception of need for orthodontic treatment and their satisfaction with their own esthetics and mastication. One trained and calibrated examiner obtained normative data using the Dental Aesthetic Index (DAI) on the need for orthodontic treatment of these students. **Results:** Associations were found between the DAI score and the patient's perception of need for orthodontic treatment ($P <0.001$), satisfaction with esthetics ($P = 0.003$), and satisfaction with mastication ($P = 0.047$). When occlusal characteristics were analyzed separately, associations between several normative and perceived needs, as well as for satisfaction with esthetics, were found. Satisfaction with mastication analysis was only found to be associated with open bite malocclusion ($P = 0.003$). **Conclusions:** The DAI revealed a consistent opinion in adolescents to link their perceived malocclusion-related conditions to esthetics. (Am J Orthod Dentofacial Orthop 2020;157:42-48)

Malocclusion, which is prevalent worldwide, affects a large percentage of the population.[1-11] Apart from provoking changes in oral function, malocclusion can increase susceptibility to trauma, periodontal disease, and caries, and it can even cause biopsychosocial problems, which, in turn, affect quality of life.[1-3] Furthermore, malocclusion may impact some individuals more significantly than other physical disorders, such as being overweight and obese.[4-7]

Having well-aligned teeth has a strong influence on the perception of beauty, identification with professional success, and intelligence, and is associated with socially favored individuals.[4-9] Conversely, patients with esthetic disorders may feel distressed and personally insecure.[4-9] Perceived malocclusion can also be considered as a predictor of biopsychosocial impact and generally has a negative effect on individuals.[10]

Occlusal indexes have been created to quantitatively determine the severity of malocclusion in a simple, quick, and precise manner, and to recommend those patients who have a greater need for orthodontic treatment. These occlusal indexes can normatively diagnose impairments at individual and collective levels. They can also be used for statistical analyses of epidemiologic studies.[11] Most of the indexes used for the diagnosis and classification of malocclusion are based on clinical and/or epidemiologic criteria.[1,2,5,11,12] Various occlusal indexes are available, including the Dental Aesthetic Index (DAI), which is an orthodontic index based on socially defined global esthetic norms.[11,13-20]

Several studies have been performed using these normative indexes, but there are few that have

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investigated the association between malocclusion as defined by normative criteria and the self-perceived needs of the individual, as well as their satisfaction with esthetics and mastication. Instruments based exclusively on the normative criteria do not consider the individual opinions of the patients about their own health and/or esthetics, or even which type of malocclusion is perceived as a problem for them. This factor cannot be underestimated when the aim is to identify and measure an orthodontic problem that may or may not affect the life of an individual.[5,7,8,12]

Owing to limited resources in the public service and the difficulty of diagnosing the severity of malocclusion correctly, the use of an instrument to objectively evaluate the needs and priorities of treatment in adolescents is necessary, but not sufficient. However, this need must be associated with the perceived needs of the patient; thus, combining their opinion about their satisfaction with esthetics and mastication with the normative criteria will bring greater benefit to those who really need orthodontic treatment. This study aimed to evaluate the relationship between technically defined orthodontic needs (normative criteria) and the treatment needs perceived by the adolescents enrolled in this study. The hypothesis was that orthodontic indexes overestimate the need for treatment in adolescents.

MATERIAL AND METHODS

A sectional study was carried out with adolescents of both sexes aged between 15 and 19 years from the secondary, technical, and technological school of the Federal Institute of Education, Science and Technology, Natal-Central Campus, Brazil. The Federal Institute of Education, Science and Technology receives students from both the public and private educational systems in a heterogeneous way. A pilot study, with 30 students, which was a representative sample of 2826 adolescents, was previously performed to calculate the sample size, adopting a 5% level of significance.

Based on the results of the pilot study, 215 adolescents from the school were selected by convenience, following the same proportion of sex and age. Initially, the students were examined for the presence or absence of malocclusion. Then, a questionnaire (Appendix), in the form of a structured interview, was carried out, with questions about their perception of need for orthodontic treatment and satisfaction with their esthetics and mastication, as well as questions regarding their access to oral health services.

The clinical data, according to the DAI,[12] was measured and recorded by a trained and calibrated examiner (kappa > 0.8). All data were recorded on an epidemiologic chart including the presence or not of any posterior crossbite.

The normative indexes were measured with a North Carolina periodontal probe, and the examinations were performed at the Institute's dental clinic, where all biosafety standards were rigorously followed.

The questionnaires were answered in a suitable room, next to the dental clinic. First the questionnaire was fully explained to the students, who then answered all questions in writing without any external influence.

The protocol of this research study was sent to and approved by the Ethics Research Committee of the Federal University of Rio Grande do Norte, according to the norms of Resolution CNS/MS 196/96, and was registered under No. 489/2011.

To participate in the research, the parents of the participating students (if they were younger than 18 years) or the students themselves (if they were older than 18 years) completed and signed a Term of Free and Informed Consent.

After the clinical examinations and completion of the questionnaires, a descriptive analysis was conducted to compare the absolute and percentage frequencies for the categorical and measured variables and standard deviations for the quantitative variables using Stata 10.0 software (StataCorp, College Station, Tex).

Subsequently, a second analysis was conducted to evaluate the association between self-perception for treatment needs, the socioeconomic and demographic data, and access to the oral health service. In addition, the associations between self-perception for need for treatment, satisfaction with mastication and esthetics, and normative data were analyzed.

The chi-square test was used with continuity correction. The Fisher exact test was used when there was a cell with an expected value of <5. The prevalence ratio and its 95% confidence interval were also checked as a measure of magnitude of association. A significance level of 5% was used for all tests.

RESULTS

In relation to the socioeconomic and demographic variables, the data suggested a slight predominance of females (51.6%) over males (48.4%). The age distribution covered all age strata. Most adolescents (62.3%) had previously studied at a public school. Only 19.5% of the students did not live with their parents. Most parents (68.8%) had completed high school, and 66.4% of families received 2 or more minimum salaries. The sample represented both the rich and poor, with a predominance of middle-class families.

Data concerning the oral health services showed that only a small number of students had never visited a dentist. However, of the 210 students who had already visited a dentist, 94 (44.7%) reported that they did not make frequent preventive visits.

When seeking odontological services, most students went to a private dentist rather than the dentist's office at the school or a public health clinic. Another relevant fact was the motivation of the last consultation. Esthetics, with regard to the positioning of the teeth, was the second most prominent reason to consult a dentist; this was second only to those who consulted a dental surgeon for a routine checkup. Orthodontic treatment was the third most common type of procedure among adolescents at their last visit to the dentist. This included students who were undergoing orthodontic treatment, and those who were having their first orthodontic consultation. However, a greater percentage than this was found for those undergoing routine dental procedures, such as cleaning with fluoride application and restoration and for esthetic reasons.

Clinical examination data, based on the DAI, showed that the prevalence of malocclusion was around 57.7%. The most frequent findings were irregularities in the mandible and molar relationships. There was an intermediate prevalence for crowding and spacing of the anterior region, followed by maxillary overjet and maxillary irregularities. Absence of dental elements and anterior crossbite were the least prevalent malocclusion-related conditions.

Although posterior crossbite is not present in the DAI, it was found in the clinical examination but with a low frequency of only 10.3%.

The DAI score showed that 31.5% of adolescents had a real need for treatment. However, according to their self-perception, most (68.9%) felt that they needed orthodontic treatment. Only 41.7% of students were satisfied with their esthetics; hence, there was a predominance of dissatisfaction or indifference with esthetics. On the other hand, 71.2% were satisfied with their ability to chew food.

The self-perception for need for treatment and satisfaction with esthetics by students who had already undergone orthodontic treatment produced an interesting (surprising) result. When these adolescents were asked about the need for treatment, a considerable portion (40%) answered yes; they thought they needed an orthodontic appliance, and only 32.1% were satisfied with their esthetics.

Table I shows the association between self-perception regarding the need for treatment, satisfaction with esthetics and mastication, and the socioeconomic and demographic variables and access to the oral health service.

No significant association was found ($P > 0.05$) (Table I). This showed that socioeconomic and demographic factors and access to the oral health service are not associated with the opinions of adolescents related to dissatisfaction with esthetics and mastication, or their motivation to seek orthodontic treatment.

Table II shows the association between self-perception of need for orthodontic treatment, satisfaction with esthetics and mastication, and normative data. Several malocclusion-related conditions were associated with self-perception of need for orthodontic treatment: mandibular irregularity, prominent maxillary overjet, crowding in 1 or more arches, molar ratio, and final DAI score (Table II).

Satisfaction with esthetics had associations with mandibular irregularity, crowding, DAI score, and maxillary irregularity (Table II). Besides these associations, which were common to the self-perception needs, the presence of diastema also showed a significant association (Table II).

When satisfaction was evaluated for mastication, only the DAI score and the open bite showed any significant values (Table II).

DISCUSSION

The hypothesis of this study, that orthodontic indexes overestimated the need for treatment in adolescents, was rejected. The results suggested that the self-perception need for treatment exceeded the normative need for treatment, and even for the prevalence of malocclusion found. These findings diverge from previous studies, in which normative criteria identified more orthodontic needs than those perceived by individuals[5]; however, our results are in agreement with more recent studies.[9,10,15,21] The greater capacity for self-perception shows that young people today are more and more demanding in relation to themselves and have established patterns of comparison based on cultural aspects that highlight the need for esthetics. In addition, today there is a consensus in our society that good physical esthetics is of great importance.[22]

The association between socioeconomic and demographic variables and variables related to individual perception reinforces this consensus theory.[18] The results of this study suggest that there was no association between these variables; therefore, any individual, regardless of his or her social and economic standing, may be equally affected by the self-perception need for treatment, and satisfaction with esthetics and mastication. Other studies have also confirmed that an individual's concern with good appearance is generalized in any society.[3,11,15,23] Moreover, a negative correlation for age and sex found previously was confirmed by this study.[11,15,17-20,23]

Table I. Relation between the socioeconomic demographic variables and access to the oral health service with self-perception need for orthodontic treatment, and satisfaction with esthetics and mastication

	Self-perceived need for orthodontic treatment					Satisfaction with esthetics				Satisfaction with mastication			
Variable	Yes	No	P Value	RP	95% CI	Unsatisfied	Indifferent	Satisfied	P Value	Unsatisfied	Indifferent	Satisfied	P Value
Age (y)													
15-17	77 (68.1)	36 (31.9)	0.896	0.969	0.791-1.187	47 (37.6)	26 (20.8)	52 (41.6)	0.885	21 (16.7)	15 (11.9)	90 (71.4)	0.725
18-19	45 (70.3)	19 (29.7)				30 (34.9)	20 (23.3)	36 (41.9)		12 (14.0)	13 (15.1)	61 (70.9)	
Sex													
Boys	50 (61.7)	31 (38.3)	0.082	0.823	0.669-1.012	36 (35.6)	22 (21.8)	43 (42.6)	0.964	12 (11.7)	16 (15.5)	75 (72.8)	0.239
Girls	72 (75.0)	24 (25.0)				41 (37.3)	24 (21.8)	45 (40.9)		21 (19.3)	12 (11.0)	76 (69.7)	
Previous school													
Public	79 (70.5)	33 (29.5)	0.661	1.066	0.863-1.317	52 (39.4)	26 (19.7)	54 (40.9)	0.453	23 (17.3)	17 (12.8)	93 (69.9)	0.664
Private	43 (66.6)	22 (33.8)				25 (31.6)	20 (25.3)	34 (43.0)		10 (12.7)	11 (13.9)	58 (73.4)	
Residence													
Others	23 (74.2)	8 (25.8)	0.628	1.094	0.864-1.385	16 (38.1)	11 (26.2)	15 (35.7)	0.621	7 (16.7)	8 (19.0)	27 (64.3)	0.417
With parents	99 (67.8)	47 (32.2)				61 (36.1)	35 (20.7)	73 (43.2)		26 (15.3)	20 (11.8)	124 (72.9)	
Educational level of mother or head of family													
Elementary school complete or incomplete	41 (74.5)	14 (25.5)	0.634	1.18	0.868-1.440	28 (44.4)	14 (22.2)	21 (33.3)	0.306	11 (17.2)	7 (10.9)	46 (71.9)	0.922
High school	49 (68.1)	23 (31.9)		1.021	0.791-1.317	31 (35.2)	21 (23.9)	36 (40.9)		12 (13.6)	12 (13.6)	64 (72.7)	
Technical school or college degree	32 (66.7)	16 (33.3)		1		16 (28.6)	11 (19.6)	29 (51.8)		10 (17.9)	8 (14.3)	38 (67.9)	
Monthly income													
A, B	26 (72.2)	10 (27.8)		1		31 (45.6)	11 (16.2)	26 (38.2)		8 (19.0)	6 (14.3)	28 (66.7)	
C	49 (63.6)	28 (36.4)		0.881	0.677-1.147	30 (31.6)	24 (25.3)	41 (43.2)		10 (10.5)	11 (11.6)	74 (77.9)	
D, E	41 (70.7)	17 (29.3)	0.561	0.979	0.753-1.272	31 (45.6)	11 (16.2)	26 (38.2)	0.316	14 (20.6)	9 (13.2)	45 (66.2)	0.391
Dentistry service													
Public	42 (68.9)	19 (31.1)	0.976	0.978	0.791-1.209	33 (42.3)	14 (17.9)	31 (39.7)	0.635	17 (22.1)	12 (15.6)	48 (62.3)	0.211
Private	69 (70.4)	29 (29.6)				41 (36.0)	25 (21.9)	48 (42.1)		15 (13.0)	16 (13.9)	84 (73.0)	

Note: Values are n (%).

RP, Return-period; *CI*, confidence interval.

Table II. Relationship between the clinical-epidemiologic examination variables (DAI index) with self-perception need for orthodontic treatment, satisfaction with esthetics and mastication

Malocclusion	Self-perceived need for orthodontic treatment					Satisfaction with esthetics				Satisfaction with mastication			
	Yes	No	P Value	RP	95% CI	Unsatisfied	Indifferent	Satisfied	P Value	Unsatisfied	Indifferent,	Satisfied,	P Value
Crowding													
Yes	54 (81.8)	12 (18.2)	0.007*	1.336	1.108-1.610	35 (46.1)	22 (28.9)	19 (25)	0.001*	15 (20.3)	13 (17.6)	46 (62.2)	0.102
No	68 (61.3)	43 (38.7)				42 (31.1)	24 (17.8)	69 (51.1)		18 (13.0)	15 (10.9)	105 (76.1)	
Anterior segment spacing													
Yes	42 (76.4)	13 (23.6)	0.208	1.165	0.958-1.416	28 (42.4)	15 (22.7)	23 (34.8)	0.359	11 (15.9)	13 (18.8)	45 (65.2)	0.225
No	80 (65.6)	42 (34.4)				49 (33.8)	31 (21.4)	65 (44.8)		22 (15.4)	15 (10.5)	106 (74.1)	
Median diastema													
Yes (≥2 mm)	11 (78.6)	3 (21.4)	0.554	1.154	0.863-1.547	8 (50.0)	6 (37.5)	2 (12.5)	0.042*	1 (6.3)	5 (31.3)	10 (62.5)	0.067
No (≤2 mm)	111 (68.1)	52 (31.9)				69 (35.4)	40 (20.5)	86 (44.1)		32 (16.3)	23 (11.7)	141 (71.9)	
Upper crowding													
Yes (≥2 mm)	34 (87.2)	5 (12.8)	0.009*	1.367	1.149-1.627	22 (51.2)	11 (25.6)	10 (23.3)	0.019*	11 (25.6)	6 (14.0)	26 (60.5)	0.112
No (≤2 mm)	88 (63.8)	50 (36.2)				55 (32.7)	35 (20.8)	78 (46.4)		22 (13.0)	22 (13.0)	125 (74.0)	
Lower crowding													
Yes (≥2 mm)	67 (83.8)	13 (16.3)	<0.001*	1.477	1.201-1.802	40 (43.0)	28 (30.1)	25 (26.9)	<0.001*	16 (17.4)	12 (13.0)	64 (69.6)	0.813
No (≤2 mm)	55 (56.7)	42 (43.3)				37 (31.4)	18 (15.3)	63 (53.4)		17 (14.2)	16 (13.3)	87 (72.5)	
Maxillary overjet													
Yes (≥4 mm)	40 (88.9)	5 (11.1)	0.002*	1.431	1.209-1.694	25 (45.5)	14 (25.5)	16 (29.1)	0.085	4 (7.3)	10 (18.2)	41 (74.5)	0.091
No (≤4 mm)	82 (62.1)	50 (37.9)				52 (33.3)	32 (20.5)	72 (46.2)		29 (18.5)	18 (11.5)	110 (70.1)	
Open bite													
Yes	24 (80.0)	6 (20.0)	0.222	1.200	0.970-1.484	19 (52.8)	4 (11.1)	13 (36.1)	0.056	12 (34.3)	2 (5.7)	21 (60.0)	0.003*
No	98 (66.7)	49 (33.3)				58 (33.1)	42 (24.0)	75 (42.9)		21 (11.9)	26 (14.7)	130 (73.4)	
Molar relation													
Half canine or more	61 (79.2)	16 (20.8)	0.012*	1.316	1.080-1.603	35 (38.5)	22 (24.2)	34 (37.4)	0.472	14 (15.2)	15 (16.3)	63 (68.5)	0.526
Normal	59 (60.2)	39 (39.8)				40 (33.9)	24 (20.3)	54 (45.8)		18 (15.3)	13 (11.0)	87 (73.7)	
Normative need (DAI)													
Yes	51 (89.5)	6 (10.5)	<0.001*	1.530	1.283-1.825	34 (50.7)	15 (22.4)	18 (26.9)	0.003*	12 (17.9)	14 (20.9)	41 (61.2)	0.047*
No	69 (58.5)	49 (41.5)				41 (28.9)	31 (21.8)	70 (49.3)		20 (14.0)	14 (9.8)	109 (76.2)	
Posterior crossbite													
Yes	12 (66.7)	6 (33.3)	1.000	0.966	0.686-1.362	9 (40.9)	2 (9.1)	11 (50.0)	0.305	7 (31.8)	1 (4.5)	14 (63.6)	0.058
No	109 (69.0)	49 (31.0)			1.108-1.610	67 (35.6)	44 (23.4)	77 (41.0)		26 (13.8)	27 (14.3)	136 (72.0)	

Note: Values are n (%).
RP, Return-period; CI, confidence interval.
*Represents statistical differences.

An association between the self-perceived need for treatment and normative data was found in this study. The adolescents studied here perceived orthodontic needs affecting anterior teeth to be most important, and this corroborated previous findings[5,14]; however, there were a greater number of such needs associated to self-perception than that indicated by previous studies.[5,15] In other regions of the world, weak positive and even negative correlations have been found between awareness of malocclusion and orthodontic concerns.[17,19,20] This may be partly explained by cultural and temporal differences and suggests the need for current studies in other parts of the world.

The association between satisfaction with esthetics and normative data in this study suggested some interesting differences in relation to a previous study.[5] Although some isolated problems had showed significance, such as crowding and mandibular irregularity, most individuals who had malocclusion were satisfied with their esthetics.[5] In Africa, studies have shown weak positive correlations between satisfaction with dental esthetics and DAI,[17,18] as well as in relation to self-esteem.[19] This can be explained in part by the standard for beauty in this region, because some occlusal features such as the midline diastema, which is strongly weighted by DAI, is not negative for this population.[17,19] Other studies[11,23] have reported similar results, and larger associations were found between DAI and satisfaction with esthetics. Associations were also found for isolated problems, such as crowding, and irregularity of the maxilla and mandible. This can be explained, drawing from the findings on the perception of treatment. Orthodontic treatment in the region of the posterior teeth appears to have no impact on satisfaction with esthetics or the perception of need for orthodontic treatment. This is demonstrated, in this study, by the absence of association of these 2 variables with posterior crossbite.

Regarding satisfaction with mastication, an association was found for anterior open bite and the final DAI score. The absence of contact owing to open bite can be clearly understood to actually hinder mastication. Considering the final DAI score, small isolated problems might not in themselves affect mastication but when combined affect the function. Despite these findings, the dissatisfaction with mastication was minimal when compared with the dissatisfaction with esthetics. The group in question showed this latter dissatisfaction, as has been reported in other studies previously.[5,11,23,24] Negative correlations between DAI and mastication have also been reported.[5,11,18,20,23]

The esthetic factor was given greater importance in this study, especially for the anterior teeth. The request for orthodontic treatment is basically influenced by the desire for a more attractive appearance.[1,9,25] Individuals whose good esthetic is injured may have their quality of life affected, showing that adolescents really care about the esthetic factor.[1] However, there is also a line of thought that says that the use of orthodontic appliances is a fad. This should be taken into consideration with adolescents, because in this phase of life these individuals are seeking to achieve the goals related to the cultural expectations of their society.[3,26] The truth is that whether a fad or not, orthodontic treatment, when implemented well, benefits those who receive it. Individuals who have undergone orthodontic treatment have greater self-esteem.[9,26,27]

The results of this study point to the need to continue combining subjective and normative criteria to reduce the existing gaps in this field. Understanding which malocclusions are perceptible to individuals will help define the criteria to prioritize orthodontic treatment. Oral health problems have been increasingly recognized as important causes of negative impact on the quality of life of individuals and society. Through its reports, the World Health Organization recognizes that oral diseases cause pain, suffering, psychological embarrassment, and social deprivation, resulting in individual and collective harm.

To evaluate the malocclusion-related conditions of adolescents in this study, the DAI was used to compare the normative needs with the self-perception needs for treatment. The choice of the DAI was because of its adoption by the World Health Organization and the International Dental Federation, as well as for its high accuracy and validity. According to our results, the DAI was consistent with the opinion of adolescents and can be considered a good epidemiologic tool to help define and prioritize orthodontic care.

The inclusion of policies in the public health services that provide access to orthodontic treatment for the population in general is fundamental, because all individuals, regardless of social class, have the right to improve their self-esteem and their biopsychosocial aspect through improvement of oral health. The findings of this study refer to a region and may represent a limitation. Therefore, new studies with different populations should be conducted out to strengthen the scientific base and to prove the need for such policies.

CONCLUSION

Within the limitations of this study we can conclude the following: DAI did not overestimate the need for orthodontic treatment; adolescents had sufficient insight to detect their malocclusion; social, economic, and demographic conditions were not associated with self-perception regarding the need for orthodontic treatment, or with satisfaction with esthetics and mastication; the

malocclusions that affect the anterior sextants were those that were most associated with self-perception of orthodontic treatment needs and satisfaction with esthetics; satisfaction with mastication was associated with only a few of the malocclusion-related conditions; malocclusion-related conditions were much more strongly related to esthetics than to masticatory functions.

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APPENDIX

Questionnaire - Access to oral health services; perception for orthodontic treatment needs; satisfaction with appearance and chewing.

l__l__l__l Interviewee number
Date: __/___/__
1   Name: _____
2   Address:

_____-
_____
3   District: _____ City:_____
4   Phone: _____
5   Date of Birth _____/_____/_____
6   Age: ____
7   l___l Gender (1) Male (2) Female
8   L___l Previous School?

   (1)   Public school
   (2)   Private school
   (3)   Philanthropic Institution
   (4)   Do not know

9   L___l Where do you live?

   (1)   Parents' house
   (2)   Family house
   (3)   Student house or accomodation
   (4)   Other

10   L___l How many people, including you, reside in your house?
11   L___l How many rooms are there in your house?
12   L___l How many rooms are permanently used as a dormitory or bedroom for the residents in your house?
13   L___l What is the educational level of your mother or guardian?

   (1)   Illiterate
   (2)   Incomplete elementary school
   (3)   Complete primary school
   (4)   High school
   (5)   Technical or vocational education
   (6)   Higher Education

14   L___l Last month, what was the total income of the members of your household, including wages, family allowance, pension, rent, retirement or other income?

   (1)   Less than 01 minimum wage
   (2)   01 minimum wage
   (3)   02 or 03 minimum wages
   (4)   04 or 05 minimum wages
   (5)   More than 05 minimum wages

   (8)   Do not know

15   L___l Have you ever been to a dentist's office?

   (1)   Yes
   (2)   No (go to question 26 and complete questions 16-25 with 8 or 88)

16   l___l You went to the dentist's office for:

   (1)   Treatment
   (2)   Check up
   (8)   Not applicable

17   l___l___l When was the last visit to the dentist? (In the number of months since the last consultation Fill in the two boxes)
18   l___l Which dental service did you go to: (Check one option only)

   (1)   Dental office of the local health department
   (2)   School dental office
   (3)   In both services
   (4)   Private practice
   (5)   Certified Dental Office/Health Plant
   (6)   Union dental Office
   ( )   Other (please specify): _____
   (8)   Not applicable

19   l___l___l What was the main reason for your last visit to the dentist?

   (Check one option only)
   (1)   Toothache
   (2)   Tooth decay
   (3)   Tooth out of position
   (4)   Bleeding gums
   (5)   Bad breath
   (6)   Accident, fall or hit in the mouth
   (7)   Redo filling for aesthetic reason
   (8)   Redo filling that fell or broke
   (9)   Check up
   ()   Other (specify) _____
   (88)   Not applicable

20   What type of treatment did you receive the last time you went to the dentist?

   (01)   Yes (02) No (08) Not applicable

   10.1 l__l__l Extraction
   10.2 l__l__l Filling (Restore)
   10.3 l__l__l Clean teeth only
   10.4 l__l__l Apply fluorine only
   10.5 l__l__l Clean and apply fluoride
   10.6 l__l__l Apply sealant
   10.7 l__l__l Canel Treatment

10.8 l__l__l Treatment for placement of prosthesis
10.9 l__l__l Periodontal surgery (some surgery on the gingiva)
10.10 l__l__l Orthodontic treatment
10.11 l__l__l Other (specify)

_____

21 l___l What is the most frequent reason you go to the dentist? (Check one option only)

(1) Most of the time for check up
(2) Most of the time because of a small problem in the mouth, such as: small discomfort associated with hot or cold food, small filling that has fallen or broken, or a problem that does not get in the way of your daily activities (go to question 23 and fill in 22 with 88)
(3) Most often only when you have a serious problem, such as: a lot of pain, a swollen mouth or another problem that is very disruptive to your daily activities (go to question 23 and fill in 22 with 88)
(4) For aesthetic reasons (crooked/out of position teeth)
(8) Not applicable

22 L__l___l How often (frequency) do you do a check up at the dentist?

Write down in months. If you do not do check ups, fill in 88.

23 L__l Compared to five years ago, you currently go to the dentist:

(1) More often
(2) With the same frequency
(3) Less frequently
(8) Not applicable

24 l___l Do you always go to the same dentist?

(1) Yes
(2) No, it changes from time to time
(3) No, always change dentist
(8) Not applicable

25 l___l Have you received orthodontic treatment?

(1) Yes, I am under treatment now
(2) Yes, in the past
(3) No, never
(8) Not applicable

26 l___l Do you think you need treatment for badly positioned teeth at this time? (orthodontic treatment or braces)

(1) Yes
(2) No
(3) Do not know

27 l___l If your dentist tells you that your front tooth should be extracted (denture of a tooth) or restored with a crown, which do you prefer?

(1) Extraction
(2) Restore with crown

28 l___l If your dentist tells you that your back tooth should be extracted (denture of a tooth)or restored with a crown, which do you prefer?

(1) Extraction
(2) Restore with crown

29 l___l By and large, are you satisfied with the appearance of your teeth?

(1) Very satisfied
(2) Satisfied
(3) Indifferent
(4) Unsatisfied
(5) Very dissatisfied
(9) Do not know

30 l___l By and large, are you satisfied with your ability to chew food?

(1) Very satisfied
(2) Satisfied
(3) Indifferent
(4) Unsatisfied
(5) Very dissatisfied
(9) Do not know