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Illness perceptions amongst individuals with dental caries

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Objective: To assess individuals' perception of dental caries, in order to explain how illness representations might influence their coping with the disease. ***Methods***: Cross-sectional questionnaire study. ***Participants:*** 520 consecutive patients (aged ≥18 years) of the General Dentistry Clinic at Universidad Cooperativa de Colombia, Pasto, Colombia who had experienced dental caries. ***Main Outcome Measures:*** Illness perception of dental caries was assessed using the Illness Perception Questionnaire Revised (IPQ-R). ***Results:*** The most frequent self-reported symptoms associated with dental caries were "toothache" (56.2%), "tooth sensitivity" (53.8%) and **"**mild to sharp pain when eating or drinking" (51.2%). The dimensions of illness perception were related to socio-economic status (SES). Symptoms of "loose or separating teeth" and "pus in your tooth" were associated with dental caries by low SES participants, while "bleeding while brushing, flossing or eating hard food" and "mild to sharp pain when eating or drinking something sweet, hot or cold" were related more to higher SES. ***Conclusions***: Perceptions of caries were related to socioeconomic status. Interventions to promote health literacy in order to improve the capacity to obtain, process and understand basic oral health information could increase an early detection of caries.

Key words: *dental caries, perception, attitudes, health belief, health behaviour, socioeconomic status, Colombia*

Introduction

Dental caries is a multifactorial disease and one of the most prevalent oral infectious conditions (Dye *et al.*, 2015). Caries is characterized by a progressive and localized destruction of teeth by acid, as a result of the metabolism of dietary carbohydrates by oral bacteria (Selwitz *et al.*, 2007). The interaction of factors such as saliva, biofilm, diet and fluoride act on the tooth surface while broader determinants include individuals' behaviors, knowledge, attitudes, education and socioeconomic status (Maltz *et al.*, 2010). Despite efforts towards disease prevention, the treatment of dental caries still is focused on reducing the impact of the disease and its effects.

Oral and general health involve a dynamic interplay amongst knowledge, attitudes and behaviors, as well as personal characteristics and perceptions (Atchison and Dubin, 2003). Since important factors for dental caries are associated with attitudes and behavior (e.g., diet), dental caries might be seen as a behavioral disease (Honkala, 1993).

Dental caries is often viewed as incomprehensible, incurable, and uncontrollable. However, the course of the disease is predictable; progressing slowly from initially relatively stable clinical signs such as white or light brown spots. At this stage many individuals may not be fully aware of the significance of this manifestation as an indicator of disease activity or latency. With caries progression, there are increases in signs (brown spots or cavities) and symptoms (slight and moderate pain) that are more recognizable by lay people.

A range of problems may emerge following the onset of a disease, which can vary from person to person with the same condition. Leventhal's Self-Regulatory Model (Leventhal *et al.*, 1997) posits that patients create their own models or representations of their illness that have an impact on the choice and appraisal of coping strategies, which are constantly adjusted throughout the course of an ailment (Leventhal *et al.*, 1984). With this appraisal process each patient will have their own thoughts about the identity (label given to the disease and symptoms), cause (perceived causes gathered from personal experiences), time-line (how long the condition might last), control/cure (the disease can be cured or kept under control) and consequences (the physical and social impact of the disease on the life) of their illness.

The Illness Perception Questionnaire (IPQ) was developed to assess the components or illness representations based on this model (Moss-Morris *et al.*, 2002). The IPQ-R (revised IPQ) has demonstrated good discriminant and predictive validity for chronic illness (Abubakari *et al.*, 2012). Our investigation focused on the identity of the disease and the seven dimensions that comprise the 38-item questionnaire. These factors assess perceptions according to *timeline–acute/chronic* (illness duration), *consequences* (the impact of the illness on life), *personal control* (how much influence people have over the illness), *treatment control* (how amenable the illness is to medical intervention), *illness coherence* (how well individuals understand the illness) and *timeline–cyclical* (whether the illness trajectory is constant or cyclical), as well as *emotional representations* (the emotional impact of the illness).

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Previous studies have investigated knowledge, attitudes and practices towards dental caries (Murthy *et al*., 2010), but few have reported patient perceptions of oral diseases. The goal of those studies was to determine how illness representations might influence individual's coping with the disease. For this study, we sought to determine perceptions about dental caries, in order to explain and understand how they, emotional experience and impact of having this disease might influence personal interpretations and responses. Ultimately, this research may stimulate novel cognitive approaches to manage this condition in our patients.

Methods

Illness perceptions of dental caries were assessed in a cross-sectional study of affected patients. The sample comprised 520 consecutive individuals ≥ 18 years of age with self-reported dental caries experience who attended the General Dentistry Clinic at Universidad Cooperativa de Colombia, Pasto, Narino, Colombia between July 2013 and July 2014. The study was approved by the Ethics Committee of Health Sciences at Universidad Cooperativa de Colombia - Pasto (Act No. CECS07-12) and informed consent form was obtained from all subjects before their participation.

We initially examined illness identity through 18 items that enquired about symptoms associated with dental caries, *e.g*., "toothache", "tooth sensitivity", "mild to sharp pain when eating or drinking something sweet, hot or cold", "pain when you bite down", "visible holes or pits in your teeth" and "pus in your tooth". Participants also were asked: (1) whether they had experienced these symptoms when they had dental caries and (2) whether they believed these symptoms were associated with this disease. Next, the seven dimensions of illness perception were assessed with the self-reported 38-item IPQ-R back-translated into Spanish. We ensured that all items fulfilled conceptual, semantic and technical equivalence to the original version and dental environment (Villalobos-Galvis *et al*., 2017). Each item was scored on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). If a participant gave more than one score for a statement, we used the highest.

The exploratory factor analysis of the IPQ-R showed a Cronbach's α for each factor ranging from 0.747–0.887, indicating high levels of reliability. The factors identified were *timeline-cyclical*, *treatment control* and *timeline-acute/chronic (integrated), consequences*, *timeline-acute/chronic*, *emotional representations*, *illness coherence* and *personal control*. Higher scores indicate stronger perceptions of illness. The score range for *timeline–cyclical* and *timeline-acute/chronic* was 4-20 for *treatment control* and *timeline-acute/chronic (integrated), consequences, illness coherence* and *personal control* was 5-25, and for *emotional representations* was 6-30.

Socio-demographic information included age, sex, place of birth, place of residence, socioeconomic status, marital status, education, and health insurance. Socioeconomic status was recorded using the government of Colombia parameters (0-1-2 strata = low class, 3-4 strata = middle class and 5-6 strata = high class). These parameters are based on income and housing quality indicators.

The participants completed the IPQ-R to self-report symptoms. They were encouraged to answer all questions, but were free to respond or not every item. Given the cognitive demands of answering questionnaires, including comprehension, recall information from memory, connect retrieved information with the question, and the response (Tourangeau, 1984); we pilot tested the IPQ-R to examine if the questions were ambiguous and improve the quality of the data collection. Twenty-six randomly selected patients from the same clinic pretested a questionnaire that included the symptoms and IPQ-R items to evaluate whether they fully understood them.

For data analysis, the socio-demographic characteristics and identity of the disease were expressed as proportions. Means with standard deviations (SD) of items and dimensions scores were calculated. Since the dimensions of IPQ-R were not normally distributed, comparisons were performed with Kruskal-Wallis test where necessary and Mann-Whitney U tests assessed the relationships between symptoms and the IPQ-R dimensions scores. The International Business Machines Corporation, Statistical Package for Social Science v. 23, Armok, NY, USA (IBM SPSS) was used for statistical analysis.

Results

The sample comprised 520 patients, most of whom were female, aged 18-25 years and with low SES (Table 1). Table 2 summarizes the symptoms experienced by patients with dental caries and those that they believed to be associated with it. The most experienced symptoms were "toothache", "tooth sensitivity" and "pain while eating or drinking something sweet, hot or cold". The most frequent self-reported symptoms that participants associated with dental caries were "toothache", "tooth sensitivity", **"**mild to sharp pain when eating or drinking", "pain when you bite down", "visible holes or pits in your teeth" and "bleeding while brushing, flossing, or eating hard food". The highest scoring IPQ-R item was «my treatment can control my dental problem» (Mean=3.54, SD=1.25).

In general, individuals recognized that dental caries is not a cyclical disease, treatment controls it in a short time, it has minor consequences, it will not last long, it has minimal impact on life, and they think the disease is not a mystery and that they can control it.

Almost all dimensions of caries perception were related to SES (Table 3). Additionally, there were significant age- and education-related impacts on some dimensions. The perception of *consequences* (p=0.013), *emotional representations* (p=0.031), *illness coherence* (p=0.027) *and personal control* (p=0.030) increased with age. On the other hand, education had a proportional inverse relationship with illness coherence (p=0.004). There were no significant differences according to sex.

We found that in low SES participants, "loose or separating teeth" and "pus in your tooth" influenced the value of the factors (Table 4). For the middle SES group, "bleeding while brushing, flossing. or eating hard food" and "mild to sharp pain when eating or drinking something sweet, hot or cold" were related more to dimensions (Table 5). The very small number of high SES participants restricted the analysis (data available on request).

Table 1. Socio-demographic characteristics of 520 individuals from General Dentistry Clinic at Universidad Cooperativa de Colombia, Pasto, Colombia

Variable	*Total (n=520)*
	%
Age	
18–25 years	53.1
>25 years	46.9
Sex	
Male	43
Female	57
Socioeconomic status	
Low	59.2
Middle	39.6
High	1.2
Place of birth	
Pasto (Capital)	53.3
Other	46.7
Permanent residency	
Pasto (Capital)	82.9
Other	17.1
Marital status	
Single	54.8
Divorced	1.9
Widow	11.7
Married	13.3
Cohabiting	18.3
Education	
None	1.5
Primary	8.5
Secondary	22.1
Post-secondary non-tertiary education	14.2
First stage of tertiary education (Career)	49.4
Second stage of tertiary education (Specialist, Master, PhD)	4.2
Health insurance	
Yes	88.3
No	11.7
Type of health insurance	
None	11.7
Subsidized	43.1
Private	45.2

Discussion

Illness perceptions are the cognitive representations or beliefs that people have about health conditions. They are important predictors of how people will behave during their illness and are directly associated with a number of health outcomes. The Self-Regulatory Model – SRM (also "Common Sense" Model or Illness Perception Model) focuses on the persons' perceptions upon their illness. According to this model, people construct their own representations or models which help them make sense of their experiences and provide a foundation for their coping responses. Other studies have explored this theoretical framework (Heffernan *et al*., 2016). Identifying illness perceptions early on provides an opportunity to improve the concordance between the professional knowledge and patient beliefs to influence treatment outcomes (Broadbent *et al*., 2009).

With regard to perceptions about dental caries symptoms, roughly half our participants associated toothache with dental caries, but more identified symptoms with more severe disease, *e.g.* individuals who had pus in their teeth. Other symptoms such as "red, swollen or tender gums" and "bleeding while brushing, flossing, or eating hard food" were associated with dental caries. Early dental caries is often asymptomatic, and so these other conditions may mark more severe disease or may have drawn participants' awareness to their teeth. Levin *et al*. (2013) also reported that the question about bleeding when people brush their teeth is a predictor of dental caries.

The highest scoring IPQ-R item was «my treatment can control my dental problem» in the *treatment control and timeline-acute/chronic (integrated)* dimension.

Socioeconomic status was related to almost all dimensions, with the perceptions of the disease higher in low-SES individuals. People of low SES may be more likely to experience emotional and physical consequences associated with seeking care later. The lowest SES individuals were 2 to 3 times more likely to feel disabled through pain than the highest SES individuals (Dorner *et al*., 2011). The risk perception of the disease in this stratum was also lower. This may explain why lower SES groups are more likely to attend the dentist in pain in hospitals or dental clinics (Jain *et al*., 2012).

The perception of *consequences*, *emotional representations*, *illness coherence* and *personal control* increased with age. Through the years, people could feel more vulnerable, and feel their response to disease is not the same as when they were younger. As individuals age, consequences have greater impacts. Older people may perceive that additional risk factors (where co-morbidities are included) affect the course of dental caries and its treatment. Moreover, the age-associated accumulation of signs and symptoms will shape how an individual responds to the presence of a disease (illness behaviors). Education was also related to illness coherence. People with higher education may have a greater understanding of the nature of a disease because they may make better connections between old and new information and associate and recall signs and symptoms that could be similar in different situations, which would make a disease more coherent.

Our study explored the seven dimensions from the Illness Perception Questionnaire- Revised (IPQ-R) and their relationship to the symptoms patients experienced when they had dental caries. In summary, people were more likely to perceive dental caries as a disease if they had "pus in your tooth", "headache", and "loose or separating teeth". "Loose or separating teeth" and "pus in your tooth" were more important in low SES, whilst "bleeding while brushing, flossing. or eating hard food" and "mild to sharp pain when eating or drinking something sweet, hot or cold" were more important in higher SES groups. The symptoms seen in low SES are indicators of disease severity. Severe disease may evoke emotional responses, which could include fear, worry, frustration and anger. Individuals also may perceive vulnerability in this state. The Health Belief Model (Hochbaum, 1958) proposes that perceived vulnerability to disease and disease severity combine to form 'threat'. Threat perceptions need to achieve a certain threshold level before people become motivated to consider health treatment (Witte, 1998).

Table 2. Symptoms experienced and associated with dental caries

Symptoms	*I experience this symptom when I have dental caries (n=520)*		*Is this symptom associated with dental caries? (n = 520)*	
	Yes	*No*	*Yes*	*No*
	%	*%*	*%*	*%*
Toothache	58.3	41.7	56.2	43.8
Tooth sensitivity	58.8	41.2	53.8	46.2
Mild to sharp pain when eating or drinking something sweet, hot or cold	54.6	45.4	51.2	48.8
Pain when you bite down	31.7	68.3	37.5	62.5
Visible holes or pits in your teeth	35.6	64.4	36.0	64.0
Pus in your tooth	8.7	91.3	16.7	83.3
Red, swollen or tender gums	22.9	77.1	24.0	76.0
Bleeding while brushing, flossing, or eating hard food	38.3	61.7	35.0	65.0
Gums that are receding or pulling away from the teeth, causing the teeth to look longer than before	15.4	84.6	16.5	83.5
Loose or separating teeth	23.5	76.5	22.1	77.9
Pus between your gums and teeth	7.5	92.5	13.1	86.9
Sores in your mouth	10.2	89.8	13.5	86.5
Persistent bad breath	16.3	83.7	18.7	81.3
A change in the way your teeth fit together when you bite	11.2	88.8	14.0	86.0
A change in the fit of partial dentures	10.4	89.6	13.8	86.2
Sore throat	19.0	81.0	17.5	82.5
Headache	22.9	77.1	18.3	81.7
Other pain in your mouth	12.3	87.7	15.2	84.8

Table 3. IPQ-R dimensions scores by SES

Dimensions	*Low SES*		*Middle SES*		*High SES*		*P value**
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	
Timeline-cyclical	10.55	4.15	8.93	3.99	5.50	1.98	<0.001
Treatment control and timeline-acute/chronic (integrated)	16.97	4.27	16.66	4.98	19.00	6.60	0.540
Consequences	13.97	4.95	11.98	4.93	6.83	2.14	<0.001
Timeline-acute/chronic	9.67	3.33	8.51	3.48	5.83	1.84	<0.001
Emotional representations	14.77	5.79	12.40	5.44	8.67	2.81	<0.001
Illness coherence	11.96	4.74	10.17	4.45	6.50	1.87	<0.001
Personal control	16.24	4.71	15.66	5.43	17.50	4.89	0.534

*Derived from Kruskal-Wallis test

The perception of this oral disease is aligned with other systemic diseases in that it is related to symptoms that represent the highest level of severity. Of note, symptoms associated with a higher SES people reflect less severe states of disease that were ambiguous in terms of dental caries diagnosis.

These data are limited because they are cross-sectional and cannot establish causality. Nevertheless, they are novel and may help to design preventive programs and oral health counseling. A second limitation is our sample was restricted to dental patients and is therefore not representative of the population. Finally, we could not compare our results with other data because so few studies have assessed dental caries perceptions. Since they also may depend on the social context, communities could have particular characteristics that result in different perceptions about this disease. Multi-center research might illucidate much better the perception of dental caries.

Conclusions

This research has implications for dental caries education in our community. Preventive programs could emphasize the identification of symptoms of the initial stages of dental caries as part of secondary prevention to promote the early detection of disease because the condition tended to be identified late in people of low SES. A focus on health literacy could improve the capacity to obtain process and understand basic oral health information.

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Table 4. Perceived symptoms related to IPQ-R dimensions for dental caries amongst 308 Low SES group participants

Symptom/IPQ-R Dimension		*Timeline-cyclical 10.55 ±4.15*		*Treatment control and timeline-acute/chronic (integrated) 16.97 ±4.27*		*Conse-quences 13.97 ±4.95*		*Timeline-acute/chronic 9.67 ±3.33*		*Emotional representa-tions 14.77 ±5.79*		*Illness coherence 11.96 ±4.74*		*Personal control 16.24 ±4.71*	
		Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Toothache	Yes *(n=186)*	11.20[2]	4.08	17.24	3.96	15.04[3]	4.77	10.17[3]	3.30	15.63[2]	5.97	12.34	4.57	16.50	4.52
	No *(n=122)*	9.55	4.07	16.57	4.68	12.34	4.77	8.90	3.24	13.46	5.24	11.39	4.94	15.84	4.96
Tooth sensitivity	Yes *(n=172)*	10.85	4.09	17.29	3.82	14.88[2]	4.75	10.28[3]	3.08	14.90	5.50	12.37	4.61	16.25	4.43
	No *(n=136)*	10.16	4.22	16.57	4.76	12.81	4.96	8.89	3.48	14.61	6.15	11.45	4.87	16.23	5.05
Mild to sharp pain when eating or drinking something sweet, hot or cold	Yes *(n=165)*	11.01	4.17	17.26	3.79	14.84[2]	4.80	9.99	3.18	15.42[1]	5.70	12.28	4.64	16.41	4.41
	No *(n=143)*	10.01	4.09	16.64	4.75	12.97	4.94	9.29	3.47	14.01	5.82	11.59	4.84	16.04	5.04
Pain when you bite down	Yes *(n=129)*	11.25[2]	4.05	16.71	4.12	14.67[1]	4.62	10.21[2]	3.25	15.62[1]	5.78	12.60[1]	4.39	16.08	4.34
	No *(n=179)*	10.04	4.16	17.17	4.38	13.46	5.12	9.27	3.34	14.16	5.73	11.50	4.95	16.36	4.96
Visible holes or pits in your teeth	Yes *(n=127)*	11.26[1]	4.31	17.25	3.72	15.24[3]	4.63	9.98	3.00	15.46	5.93	12.46	4.53	16.83	4.32
	No *(n=181)*	10.04	3.98	16.78	4.62	13.07	4.98	9.44	3.54	14.29	5.65	11.61	4.87	15.82	4.93
Pus in your tooth	Yes *(n=63)*	12.54[3]	3.99	16.24[1]	3.93	15.08[1]	4.34	10.67[2]	2.88	16.95[3]	5.52	13.71[3]	4.16	16.33	3.64
	No *(n=245)*	10.03	4.05	17.16	4.34	13.68	5.06	9.41	3.40	14.21	5.73	11.51	4.78	16.22	4.95
Red, swollen or tender gums	Yes *(n=86)*	11.38[1]	4.06	16.85	3.60	14.40	4.64	10.17	2.94	16.34[2]	5.43	12.81[1]	4.31	16.59	3.67
	No *(n=222)*	10.22	4.15	17.02	4.51	13.80	5.06	9.47	3.46	14.16	5.82	11.63	4.87	16.10	5.05
Bleeding while brushing, flossing. or eating hard food	Yes *(n=116)*	10.78	4.15	17.50	3.98	14.03	5.14	9.98	3.28	14.76	5.81	12.47	4.79	16.55	4.44
	No *(n=192)*	10.40	4.16	16.66	4.42	13.93	4.84	9.47	3.36	14.78	5.79	11.65	4.70	16.05	4.86
Loose or separating teeth	Yes (n=86)	11.77[2]	4.26	16.15[2]	3.37	15.16[2]	4.69	10.72[3]	3.10	15.44	5.73	13.01[2]	4.42	15.64	4.11
	No *(n=222)*	10.07	4.02	17.29	4.54	13.50	4.97	9.26	3.33	14.51	5.80	11.55	4.81	16.47	4.91
Headache	Yes *(n=72)*	11.65[1]	3.94	16.99	3.78	15.13[1]	4.52	10.53[2]	3.00	15.97[1]	5.23	13.50[2]	4.55	16.51	3.73
	No *(n=236)*	10.21	4.17	16.97	4.42	13.61	5.02	9.40	3.39	14.40	5.91	11.49	4.71	16.16	4.97

Derived from Mann-Whitney U test. [1]$p<0.05$, [2]$p<0.01$, [3]$p<0.001$

Table 5. Perceived signs and symptoms related to IPQ-R dimensions for dental caries amongst 206 Middle SES participants

Symptom/IPQ-R Dimension		*Timeline-cyclical 8.93 ±3.99*		*Treatment control and timeline-acute/ chronic (integrated) 16.66 ±4.98*		*Conse-quences 11.98 ±4.93*		*Timeline-acute/ chronic 8.51 ±3.48*		*Emotional representa-tions 12.40 ±5.44*		*Illness coherence 10.17 ±4.45*		*Personal control 15.66 ±5.43*	
		Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Toothache	Yes *(n=103)*	9.50	4.14	17.51[1]	4.36	12.98[2]	4.50	9.24[1]	3.79	13.33[1]	5.37	10.50[1]	4.38	16.26	5.06
	No *(n=103)*	8.36	3.76	15.80	5.42	10.98	5.15	7.79	2.97	11.48	5.35	9.84	4.51	15.05	5.73
Tooth sensitivity	Yes *(n=103)*	9.71[2]	4.15	17.27	4.61	12.66[1]	4.42	9.06[1]	3.57	12.96	5.54	10.67	4.39	16.07	4.84
	No *(n=103)*	8.16	3.67	16.04	5.28	11.30	5.33	7.97	3.32	11.84	5.29	9.67	4.48	15.24	5.95
Mild to sharp pain when eating or drinking something sweet, hot or cold	Yes *(n=97)*	9.72[2]	4.10	17.92[2]	4.16	12.54	4.64	8.96	3.61	13.23[1]	5.55	10.37	4.39	16.21	4.87
	No *(n=109)*	8.23	3.76	15.53	5.39	11.49	5.15	8.12	3.33	11.67	5.25	9.99	4.53	15.17	5.86
Pain when you bite down	Yes *(n=66)*	9.80[1]	4.16	17.85[1]	4.01	13.48[2]	4.22	9.33[1]	3.70	13.61[1]	5.58	10.82	4.51	15.85	4.78
	No *(n=140)*	8.52	3.85	16.09	5.31	11.27	5.10	8.13	3.32	11.84	5.29	9.86	4.41	15.56	5.72
Visible holes or pits in your teeth	Yes *(n=60)*	9.60	4.04	17.10	4.64	12.00	4.18	9.32[1]	3.62	13.47	5.71	10.78	4.47	15.65	4.81
	No *(n=146)*	8.66	3.95	16.47	5.12	11.97	5.22	8.18	3.38	11.97	5.28	9.92	4.44	15.66	5.68
Pus in your tooth	Yes *(n=24)*	11.25[2]	4.63	16.58	3.88	13.42	4.75	10.42[1]	4.18	14.50	6.51	11.63	5.30	15.33	4.92
	No *(n=182)*	8.63	3.81	16.66	5.12	11.79	4.94	8.26	3.31	12.13	5.24	9.98	4.31	15.70	5.50
Red, swollen or tender gums	Yes *(n=39)*	10.82[2]	4.32	17.28	3.37	13.67	5.09	9.46	3.91	14.85[2]	5.68	11.41[1]	4.39	16.90	4.07
	No *(n=167)*	8.49	3.79	16.51	5.29	11.59	4.83	8.29	3.34	11.83	5.23	9.88	4.43	15.37	5.67
Bleeding while brushing, flossing. or eating hard food	Yes *(n=64)*	10.25[2]	3.83	17.56	3.55	12.98	4.92	9.45[2]	3.48	14.02[2]	5.81	11.17[1]	4.05	16.89	4.00
	No (n=142)	8.34	3.93	16.25	5.47	11.53	4.89	8.09	3.41	11.68	5.11	9.72	4.57	15.10	5.89
Loose or separating teeth	Yes *(n=29)*	10.52[1]	4.55	17.07	4.09	13.28	5.16	9.93[1]	3.98	14.38[1]	5.40	11.52	5.00	16.34	4.97
	No *(n=177)*	8.67	3.84	16.59	5.12	11.77	4.88	8.28	3.35	12.08	5.39	9.95	4.33	15.54	5.51
Headache	Yes *(n=22)*	11.23[2]	4.50	15.82	4.23	13.09	4.62	9.91	3.88	14.27	5.51	12.86[2]	4.91	15.68	4.16
	No *(n=184)*	8.66	3.84	16.76	5.07	11.85	4.96	8.35	3.40	12.18	5.40	9.85	4.30	15.65	5.57

Derived from Mann-Whitney U test. [1]$p<0.05$, [2]$p<0.01$

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