Predictors of treatment preference for mandibular fracture

Claudia Der-Martirosian, PhD[1]; Melanie W. Gironda, PhD, MSW[1]; Edward E. Black, DDS, MS[2]; Thomas R. Belin, PhD[3]; Kathryn A. Atchison, DDS, MPH[1]

1 UCLA School of Dentistry
2 Charles R. Drew University of Medicine and Science
3 UCLA School of Public Health

Keywords
patient preference; mandibular fracture; MMF; RIF; standard gamble.

Correspondence
Send correspondence and reprint requests to Dr. Claudia Der-Martirosian, UCLA School of Dentistry, PO Box 951668, 10833 Le Conte Avenue, Los Angeles, CA 90095-1668. Tel.: 310-825-4471; Fax: 310-206-2688; e-mail: cdermart@aol.com. Claudia Der-Martirosian, Melanie W. Gironda, and Kathryn A. Atchison are with the UCLA School of Dentistry. Edward E. Black is with the Charles R. Drew University of Medicine and Science. Thomas R. Belin is with the UCLA School of Public Health.

Received: 5/30/08; accepted for publication: 4/14/09.

doi: 10.1111/j.1752-7325.2009.00138.x

Abstract

Background: Patient treatment preferences do not necessarily remain stable over time.
Objective: This study focuses on predictors of patient treatment choice and on the extent to which patients are willing to take risks by choosing surgical versus non-surgical treatment for mandibular fracture.
Methods: Surveys of African-American and Hispanic adults receiving treatment at King/Drew Medical Center for either a mandibular fracture ($n = 98$) or third-molar removal ($n = 105$) were used to investigate patterns of patient preference over the course of a 4-month study period using generalized estimating equations controlling for age, gender, income, and fracture versus third-molar patient. The study examined the effects of symptom rating and a "standard gamble" measure reflecting a patient's willingness to accept scarring or nerve damage. This analysis is based on 169 patients who participated in four waves of data collection.
Results: The most salient predictor of patient treatment was the standard gamble measure at 1-month follow-up. Subjects with higher risk tolerance were more likely to select surgery versus jaw wiring. A higher likelihood of choosing surgery was associated with higher income and greater symptom severity. Fracture patients were more likely to select surgery compared with third-molar patients.
Conclusions: The significance of symptom severity 1-month post-surgery raises an important issue regarding the healing process. Moreover, the significance of standard gamble as a predictor of treatment choice for mandibular fracture should encourage other researchers to use this measure of willingness to accept risk when studying acute conditions such as jaw fracture.

Introduction

Some patients wish to become actively involved in treatment decision-making while others wish to adopt a more passive role (1). In today's health-care systems, patients are frequently encouraged to educate themselves about various treatment options and their consequences. Patients often do not select the treatment that is recommended by the clinician, either because they do not view the treatment benefit positively or because the risk and potential harm of side effects are perceived to be more serious than clinicians might judge them (2). When patients do select a treatment, recent studies indicate that treatment preferences do not necessarily remain stable over time (3-7). Less attention has been devoted to studying factors involved in changing patient preferences over time.

Patient decision-making has been widely studied in medical treatment, but the literature on the decision-making process for dental treatment is less extensive (8-12). The present study attempts to bridge this gap and learn more about patient decision-making when selecting treatment for mandibular fracture. The study was conducted at the King/Drew Medical Center (KDMC) in Los Angeles, California, an inner-city hospital serving predominantly minority populations, particularly African-American and Hispanic. In the first phase of this two-phase study, fracture and third-molar patients discussed issues and concerns they encountered during their healing process by participating in focus groups. The list of concerns was then incorporated in the study questionnaire for the second phase of the study. Appearance of a scar on the face was the most frequently expressed concern

for surgical treatment, and functional limitations, especially related to talking and eating, were the most commonly discussed concerns regarding non-surgical treatment (13).

The mandible, despite being the largest and strongest facial bone, is commonly fractured as a result of trauma to the face. Assault is the most common cause of mandibular (jaw) fractures, followed by motor vehicle accidents and gunshot wounds (14,15). Two standard treatments are used to repair mandibular fractures, with advantages and disadvantages of both methods (13,16–20). One is a surgical treatment known as rigid internal fixation (RIF), which involves placement of a metal plate to stabilize the broken segments of the mandible. The other is a non-surgical treatment known as maxillomandibular fixation (MMF), which stabilizes the jaw by wiring it shut for 4-6 weeks. By incorporating Phase I focus-group patient-reported concerns about treatment of jaw fracture into the Phase II patient survey (13), this paper builds on previously published research and systematically examines patient preferences for each treatment method among a sample of third-molar and jaw-fracture patients that is larger than any previously reported. This analysis explores the determinants of treatment preference for mandibular fracture over a 3-month course of recovering from jaw fracture or third-molar extraction.

Methods

Study sample

A prospective cohort study was conducted of subjects receiving treatment at KDMC. Patients receiving care for treatment of a mandible fracture represented the group of primary interest. A comparison group of patients seeking surgical removal for third molars was chosen to assess the similarities and differences in decision-making among people in the same community who were also undergoing an oral-surgical treatment (21). Subjects were interviewed at four time points, namely at admission and at three follow-up time points 1, 2, and 3 months posttreatment.

The oral/maxillofacial surgeon at KDMC screened all study subjects. Inclusion criteria were the following: males and females between 18 and 60 years of age, have the ability to speak English or Spanish, admitted to the hospital for either a mandibular facture or planned surgical removal of impacted third-molar teeth under general anesthesia, capable of answering a medical history, not suffering from uncontrolled epilepsy or a severe psychiatric problem, and deemed capable of giving informed consent. A total of 315 patients met the first level of inclusion of which 128 were mandibular-fracture patients and 187 were third-molar patients.

Fracture patients were excluded from the study if either their fracture displacement was less than 2 mm, in which case MMF would be the presumptive treatment, or they presented with serious injuries such as a gunshot wound, a high condylar fracture, or with fracture displacement greater than 4 mm, in which case it was unlikely that the type of treatment could be randomly applied. Fracture patients were screened during admission prior to discussion of treatment options. A total of 30 mandibular-fracture patients screened were ruled out under the exclusion criteria, leaving a sample of 98 mandibular-fracture subjects who were informed about the study and its purpose and were given a letter inviting them to participate in the study. After agreeing to participate, they were consented by the surgeon (21).

Third-molar patients underwent an initial assessment by an oral and maxillofacial surgeon prior to being scheduled for surgical extraction under general anesthesia. Third-molar patients were given the invitation letter describing the study when they arrived at the clinic waiting area on the day of the assessment, and the surgeon explained the study during the assessment screening. Informed consent took place for those who agreed to participate. Of the 82 third-molar patients who did not participate in the study, 74 did not agree to participate and 8 were determined to be not eligible to participate (21).

For this analysis, data came from the 169 of the 203 subjects ($n = 84$ fracture patients, $n = 85$ third-molar patients) who participated in all four waves of data collection. The purpose of this analysis is to determine the factors associated with the selection of MMF or RFF treatment.

Study measures

To measure treatment preference, all study subjects were presented two identical hypothetical scenarios for treatment of a mandibular fracture: a non-surgical approach of wiring the teeth (MMF) or a surgical placement of bone plate (RIF). Much attention had been paid to the actual presentation of the treatment scenarios. KDMC Institutional Review Board (IRB) reviewed all language and required information to be presented in a language and a format that subjects could understand. Both the University of California at Los Angeles (UCLA) and KDMC IRBs agreed upon a combination of verbal, written, and graphic depiction. The IRB review helped guide the final wording of the informed consent and the structured questionnaire. A final IRB approval was received from UCLA and KDMC to conduct this study.

In the first scenario, subjects were informed that the non-surgical choice required wiring the jaws together 4-8 weeks while the bones heal. With this treatment, subjects were told they would not be able to open their mouth but would be able to drink liquid food through a straw and talk out of the side of their mouth. The presentation at each wave described common problems associated with jaw wiring, such as pain lasting up to 3 months, eating problems, and speaking problems (see Appendix A).

Study subjects were then presented with information on the second treatment option, which was the surgical method of an incision in the neck under the mandible and fixation by a metal plate to hold fragments in position while healing. Study subjects were informed that they would be able to open their mouth and eat a soft diet within a day or two after surgery. Common problems associated with this treatment were also described, including pain/soreness, swelling, eating difficulties, and temporary nerve problems (see Appendix A). After presenting the two scenarios, study subjects were asked which treatment they would prefer. At each of the three follow-up surveys at 1, 2, and 3 months after admission, study subjects were presented with the same two hypothetical scenarios and asked again to make a decision as to which treatment they would choose if they had a jaw fracture.

The interview process at each wave included two assessments of the value subjects were willing to place on health outcomes, known as "standard gamble" and "willingness to pay." In this study, standard gamble was used as a measure of the extent to which patients were willing to take risks. It was designed to assess the trade-off between favorable outcomes, such as improved health function or appearance, and adverse outcomes, such as a serious complication associated with surgery. The strength of the preference for a specific treatment is expressed in terms of the risk, expressed as a percentage chance of an adverse outcome, they would accept for obtaining improved health function. A lower anchor point of 0 percent represents a subject's decision never to select surgery instead of jaw wiring, and an upper anchor point of 100 percent signifies the subject has a strong preference for surgery even if assured of scarring or nerve damage.

Demographic and socioeconomic data were collected at admission, with monthly household income categorized into four groups ($0-616, $617-766, $767-999, and $1,000 or more). Participants were also presented at each wave with a checklist of potential problems, such as not being able to eat comfortably, feeling tingling or numbness, or pain that possibly could be associated with the treatment decision (see Appendix B). For each symptom, study subjects were asked, "In the past 2 weeks, how often did you experience this symptom?" The subjects could answer *never, not too often, sometimes, often*, and *always* (see Appendix B). A symptom severity scale was constructed by summing the responses to the 12 symptom items.

Patterns of treatment preferences over the course of the study were analyzed, controlling for admission treatment preference. The generalized linear models (GENMOD) procedure in SAS version 9.12 (SAS Institute, Inc., Cary, NC, USA) was used to carry out a generalized estimating equation (GEE) analysis of repeated binary outcomes reflecting treatment preference for mandibular fracture. The GEE method allows repeated observations from the same study subject over time to be correlated. The mean response is modeled as having a logistic regression on the explanatory variables: age, gender, an ordinal measure of income within specified ranges, patient group (fracture versus third-molar), symptom severity, and percentage risk tolerated on the standard gamble measure.

Results

Table 1 presents patient characteristics by patient group. There were no significant differences between fracture and

Table 1 Patient Characteristics by Treatment Received

	Treatment received		
	Fracture (n = 84)	Third-molar (n = 85)	
Patient characteristics	Mean (SD) or %	Mean (SD) or %	P-value*
Age	35 (10.8)	28 (6.1)	<0.001
Education (0-4)	1.5 (0.8)	1.7 (0.8)	0.767
Income (0-3)	0.8 (1.2)	0.8 (1.2)	0.548
Male	87%	49%	<0.001
African-American	67%	49%	0.029
Unemployed	56%	33%	0.003
Symptom rating at (FU1)	20 (7.5)	6 (5.6)	0.004
Standard gamble (% risk)	56% (48%)	28% (43%)	<0.001
Treatment preference for surgery			
Admission	35%	24%	0.129
One-month follow-up (FU1)	52%	28%	0.002
Two-month follow-up (FU2)	57%	32%	0.001
Three-month follow-up (FU3)	57%	31%	0.001

* t-test or chi-square P-value comparing fracture versus third-molar patients.
SD, standard deviation.

Table 2 Pattern of Subject Treatment Preference for Mandibular Fracture at Admission and Three Monthly Follow-Ups

	All subjects (n = 169)	Fracture patients (n = 84)	Third-molar patients (n = 85)
Response pattern†	%	%	%
Wire (w, w, w, w)	37	25	48
Surgery (s, s, s, s)	14	18	11
Wire/surgery (once)	37	42	32
Detailed pattern			
w,w,w,s	5	2	8
w,w,s,s	4	6	1
w,s,s,s	17	23	11
s,w,w,w	7	7	7
s,s,w,w	2	1	4
s,s,s,w	2	2	1
Wire/surgery (twice+)	12	15	9*
Detailed pattern			
w,w,s,w	4	2	6
w,s,w,w	1	1	1
w,s,w,s	2	4	0
w,s,s,w	2	2	1
s,w,w,s	1	1	0
s,w,s,w	1	1	1
s,w,s,s	1	2	0
s,s,w,s	1	1	0

* Chi-square $P = 0.017$, comparing fracture and third-molar patients.
† Wire: study subjects chose wire at each wave; Surgery: study subjects chose surgery at each wave; Wire/Surgery (once): study patients changed their preference once; Wire/Surgery (twice+): study patients changed their preference two or more times.

third-molar patients in terms of education or income; however, fracture patients were older (mean age 35 versus 28 years, $P < 0.001$), more likely to be male (87 versus 49 percent, $P < 0.001$), more likely to be African-American (67 versus 49 percent, $P = 0.029$), and more likely to be unemployed (56 versus 33 percent, $P = 0.003$). Table 1 also presents patient preference for surgery by treatment received at each wave. At admission, there were no significant differences between fracture and third-molar patients. However, at the 1-, 2-, and 3-month follow-ups, fracture patients were more likely to choose surgery over wiring when given a hypothetical scenario of choosing treatment for a future jaw fracture.

Table 2 presents descriptive data of treatment preference response pattern for the 169 study subjects who participated in all four waves. The findings indicate that 37 percent of study patients consistently preferred wiring to surgery. Only 14 percent consistently preferred surgery rather than wiring. Of the rest of the sample, 37 percent changed preference only once during the course of the study and 12 percent changed their decision twice or more. These response patterns differed between the two treatment groups. The second and third columns in Table 2 illustrate the response pattern for fracture and third-molar patients. Almost half (48 percent) of third-molar subjects consistently preferred wiring while only 25 percent of fracture subjects did so. Overall, more participants changed their decision in the fracture group than in the third-molar group ($P = 0.017$).

Table 3 presents findings from the GEE analysis with age, gender, income, symptom severity, an indicator for patient group, and standard gamble percentage entered as predictors while controlling for treatment preference at admission. In part, because fracture patients scored significantly higher than third-molar patients on symptom severity at the first follow-up and the standard gamble measure, we also considered two interaction terms, namely (fracture patient) × (symptom rating) and (fracture patient) × (standard gamble measure).

Findings from the GEE analysis showed four significant predictors: risk tolerance based on standard gamble, income, symptom rating, and patient group (see Table 3). The most salient finding related to the standard gamble at first follow-up. Subjects who accepted a higher percentage risk of adverse

Table 3 Predictors of Treatment Preference for Surgery in GEE Analysis

Predictors	Parameter estimate	95% CI lower	95% CI upper	z P-value
Age	–0.007	–0.046	0.031	0.713
Female	0.590	–0.110	1.291	0.099
Income category	**0.425**	**0.169**	**0.681**	**0.001**
Fracture patients	**1.838**	**0.146**	**3.530**	**0.033**
Symptom rating at FU1	**0.090**	**0.012**	**0.167**	**0.024**
Symptom and fracture interaction	–0.096	–0.196	0.005	0.062
Standard gamble at FU1	**0.049**	**0.037**	**0.061**	**<0.001**
Standard gamble and fracture interaction	–0.008	–0.023	0.007	0.308
Treatment preference at admission	–0.348	–1.135	0.440	0.387
Constant	–3.735	–5.221	–2.248	<0.001

CI, confidence interval; FU1, 1-month follow-up; GEE, generalized estimating equations. Bold indicates significance at $p < .05$.

side effects of surgery on the standard gamble were more likely to prefer surgery over jaw wiring ($P < 0.001$). Higher level of income was associated with higher likelihood of choosing surgery ($P = 0.001$), and for symptom severity 1-month post-surgery, the higher the rating, the higher the likelihood of selecting surgery ($P = 0.024$). Also, fracture patients were more likely to select surgery than third-molar patients ($P = 0.033$). A borderline significant result suggested a greater preference for surgery among women. Neither interaction term was significant at the conventional 0.05 level, but there was a borderline significant interaction between fracture group and symptom severity with the opposite sign and comparable magnitude as the main effect of symptom severity ($P = 0.062$). This result suggests that the relationship between symptom severity and preference for surgery was stronger among third-molar patients.

Discussion

The fact that many patients have changing judgments about treatment preferences regarding oral surgery reflects both the challenge and importance of incorporating patient perspectives into treatment decisions. The significant effect of symptom severity on treatment preference suggests that the healing process has an important effect on treatment preferences. If the healing process goes smoothly, without complication, then patients might stay with their initial treatment choice, whereas when complications occur during the healing process, patients might decide to change their initial treatment preference. One reason may be that they attribute the complicated recovery to the type of treatment and, in retrospect, see their initial preference as wrong.

Focus on short-term outcomes when making treatment decisions was also evident for this patient population. Income as a significant predictor of treatment preference suggests that the ability to continue to access financial resources has an influence on treatment decisions. This finding is substantiated by findings of focus groups on a similar sample (13) where surgery was favored over jaw wiring because it would allow a return to work sooner. Thus, for this patient population, health-care decisions seem to be influenced by more immediate, day-to-day concerns as opposed to longer term concerns such as scarring or nerve damage.

While third-molar surgery is more common than jaw fracture, making third-molar patients an attractive comparison group exemplifying experience with oral surgery and recovery from general anesthesia, the significant differences between these groups raise concerns about the applicability of insights from third-molar patients for treatment of mandibular fracture. Although both groups have similar sociodemographic characteristics, psychosocial characteristics, which put jaw-fracture patients at risk for interpersonal violence, may influence decision-making. Future research, which uses third-molar patients as a comparison group, will have to examine these group differences.

Findings of this study show risk tolerance as measured by a standard gamble to be an important determinant of treatment preference for mandibular-fracture patients. Standard gamble has been used as a measure of risk tolerance in a variety of medical studies (5,22,23), but to our knowledge this is the first time it has been used as a risk tolerance measure to predict treatment preference for mandibular fracture. The literature on health utilities and risk assessment focuses primarily on chronic health conditions such as cancer (6), multiple sclerosis (22), lupus (23), and end-of-life treatment preferences (5). This study focuses on an acute condition, jaw fracture, and found standard gamble to be a salient predictor of treatment preference for mandibular fracture.

The results of this study should encourage researchers and clinicians to administer a standard gamble question as a measure of risk attitude in predicting treatment preference for mandibular fracture. The ability to identify patients that may be more likely to change their treatment preference and under what circumstances would help researchers as they design screening instruments, and clinicians as they discuss treatment options and risks at the outset. Ultimately, providing insight to both the patient and provider into what may prompt a change in treatment decision may serve to stabilize this preference over the course of treatment and recovery.

Acknowledgment

This study was supported by National Institute of Dental and Craniofacial Research Grant RO1-DE-13839.

References

1. Chapple H, Shah S, Caress AL, Kay EJ. Exploring dental patients' preferred roles in treatment decision-making – a novel approach. *Br Dent J.* 2003;**194**(6):321-7.
2. Birch S, Ismail AI. Patient preferences and the measurement of utilities in the evaluation of dental technologies. *J Dent Res.* 2002;**81**(7):446-50.
3. Hellinger FJ. Expected utility theory and risky choices with health outcomes. *Med Care.* 1989;**27**(3):273-9.
4. Zaliadt SB, Ramsey SD, Penson DF, Hall IJ, Ekwueme DU, Stroud L, Lee JW. Why do men choose one treatment over another?: a review of patient decision making for localized prostate cancer. *Cancer.* 2006;**106**(9):1865-74.
5. Fried TR, Byers AL, Gallo WT, Van Ness PH, Towle VR, O'Leary JR, Dubin JA. Prospective study of health status preferences and changes in preferences over time in older adults. *Arch Intern Med.* 2006;Apr(**166**):890-5.
6. Jansen SJ, Kievit J, Nooij MA, Stiggelbout AM. Stability of patients' preferences for chemotherapy: the impact of experience. *Med Decis Making.* 2001;**21**(4):295-306.

7. Hirose T, Hirochi N, Ohmori T, Kusumoto S, Sugiyama T, Shirai T, Ozawa T, Ohnishi T, Adachi M. Patients preferences in chemotherapy for advanced non-small-cell lung cancer. *Intern Med.* 2005;**44**(2):107-13.
8. Awad MA, Shapiro SH, Lund JP, Feine JS. Determinants of patients' treatment preferences in clinical trial. *Community Dent Oral Epidemiol.* 2000;**28**:119-25.
9. Shetty V, Dent DM, Glynn S, Brown KE. Psychosocial sequelae and correlates of orofacial injury. *Dent Clin North Am.* 2003;**47**(1):141-57.
10. Weaver NE, Major PW, Golver KE, Varnhagan CK, Grace M. Orthodontists' perception of need for jaw surgery. *Int J Adult Orthodon Orthognath Surg.* 1996;**11**(1): 49-56.
11. Fordyce AM, Lalani Z, Songra AK, Hildreth AJ, Carton ATM, Hawkesford JE. Intermaxillary fixation is not usually necessary to reduce mandibular fractures. *Br J Oral Maxillofac Surg.* 1999;**37**:52-7.
12. Ellis E III, Muniz O, Anand K. Treatment considerations for comminuted mandibular fractures. *J Oral Maxillofac Surg.* 2003;**61**(8):861-70.
13. Der-Martirosian C, Gironda MW, Black E, Leathers R, Atchison KA. Decision-making process for treatment of mandibular fracture among minority groups. *J Public Health Dent.* 2006;**66**(2):37-43.
14. Ogundare BO, Bonnick A, Bayley N. Pattern of mandibular fractures in an urban major trauma center. *J Oral Maxillofac Surg.* 2003;**61**(6):713-8.
15. Dongas P, Hall GM. Mandibular fracture patterns in Tasmania, Australia. *Aust Dent J.* 2002;**47**(2):131-7.
16. Fun-Chee L, Shanmuhasuntharam P. A simple method to enable feeding during maxillomandibular fixation of the jaws. *Oral Surg Oral Med Oral Pathol.* 1993;**75**(5):549-50.
17. Dunaway DJ, Trott JA. Open reduction and internal fixation of condylar fractures via an extended bicoronal approach with masseteric myotomy. *Br J Plast Surg.* 1996;**49**:79-84.
18. Ellis E II, McFadden D, Simon P, Throckmorton G. Surgical complications with open treatment of maxillomandibular condylar process fractures. *J Oral Maxillofac Surg.* 2000;**58**: 950-8.
19. Zide MF, Kent JN. Indicators for open reduction of mandibular condyle fractures. *J Oral Maxillofac Surg.* 1983;**41**:89-98.
20. Furr AM, Schweinfurth JM, Warren LM. Factors associated with long-term complications after repair of mandibular fractures. *Laryngoscope.* 2006;**116**:427-30.
21. Atchison KA, Gironda MW, Black EE, Schweitzer S, Der-Martirosian C, Felsenfeld A, Leathers RD, Belin TR. Baseline characteristics and treatment preferences of oral surgery subjects. *J of Oral and Maxillofac Surg.* 2007;**65**(12):2430-7.
22. Prosser LA, Kuntz KM, Bar-Or A, Weinstein MC. The relationship between risk attitude and treatment choice in patients with relapsing-remitting multiple sclerosis. *Med Decis Making.* 2002;**22**(6):506-13.
23. Fraenkel KM, Bogardus ST Jr, Wittink DR. Risk attitude and patient treatment preference. *Lupus.* 2003;**12**:370-6.

Appendix A Common Problems for Treatment (MMF or RIF) of Mandibular Fracture

Treatment type	
MMF	**RIF**
Pain which may last up to 3 months	Pain
Sharp pokes in the mouth from wires	Swelling
Eating difficulties	Eating difficulties
Talking problems	Temporary nerve problem
Difficulties in keeping mouth clean and fresh	
Prolonged problems opening mouth for many weeks	

Appendix B We Would Like to Ask If You Had Any of the Following Problems During Healing

In the past 2 weeks, how often . . .	Never	Not too often	Sometimes	Often	Always
Did you have difficulty opening your mouth as wide as you wanted?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did you have difficulty sleeping because of your teeth or jaw or appliance?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did you feel or see your jaw or face was swollen?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did you feel a tingling or numbness in your jaw, face or lip?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did you feel a weird sensation in your jaw (foreign body sensation)?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did your teeth or jaw not close together correctly?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Were you bothered by irritating wires?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Were you concerned by the appearance of a scar from surgery?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did you have a pain in your teeth, jaw or face?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did you have bad breath?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did you bite on your gum tissue?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
Did you feel pressure around your teeth?	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4