







Assessing perioperative discomfort in oral surgeries: advancing validation of the QCirDental Questionnaire

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Aim: The aim of this study is to observe the perioperative discomfort resulting from oral surgeries, while also advancing the validation process of the Self-Perception Questionnaire of Dentoalveolar Oral Surgery (QCirDental). **Methods:** The study was characterized as observational and cross-sectional. The sample was composed by 432 patients submitted to dental extractions. Where performed test-retest reliability, split-half reliability and exploratory factor analysis. **Results:** The study demonstrated the reliability of the QCirDental questionnaire through test-retest (Ca .93) and split-half reliability analyses (First: $r .92$ $p < .001$; Second: $r .92$ $p < .001$). Three domains, namely Physical Feelings (PF), General Perceptions (GP), and Feeling of Loss (FL), were identified through exploratory factor analysis. The PF domain exhibited the strongest correlation ($r_s .95$, $p < .001$) with the overall questionnaire score implying that it could be reduced to a set of 11 questions. Surgical time showed association with PF and GP; surgical complexity with PF and GP and; volume of local anesthesia with PF and GP. **Conclusions:** This study provides insights into the factors influencing patient discomfort during oral surgeries. This research also advanced the validation process of QCirDental, confirming its reliability.

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Introduction

Dentoalveolar surgery, encompassing the surgical management of diseases affecting the teeth and their supporting hard and soft tissues, plays a critical role in oral health care. Studies indicate that approximately 80% of patients undergoing routine dental extractions encounter discomfort or inconvenience during the perioperative period. This underscores the need for an assessment tool to evaluate care quality, identify areas for improvement, categorize procedures, and recommend interventions aimed at enhancing patient comfort and safety. Such instruments of evaluation can contribute significantly to the implementation of preventive and protective measures, benefiting both patients and dentists alike^{1,2}.

The Self-Perception Questionnaire of Dentoalveolar Oral Surgery (QCirDental)¹ was developed with the objective of quantifying the negative impacts and discomfort experienced by patients during the immediate perioperative period of dentoalveolar surgeries. Its purpose is to assess the surgical procedure's associated discomfort and provide a measure of the impact it has on patients. This research tool may also hold potential for assessing interventions during oral surgery and can provide valuable insights into identifying improved methods for approaching these challenging and potentially traumatic procedures.

Several questionnaires have been developed to assess various aspects and challenges related to diseases and treatments. However, it appears that the detrimental effects of dental extractions have been overlooked, and the sole instrument found in English literature to evaluate the quality of oral surgery interventions was described by Reissmann et al.³ (2013) (Burdens in Oral Surgery Questionnaire - BiOS-Q). BiOS-Q consists of 16 questions, including seven questions related to anesthesia, five about pressure and vibration, and one for each: noises, taste, pain, and surgical time. The understanding of discomforts experienced during dental surgery is hindered by a significant knowledge gap, primarily attributed to the scarcity of studies conducted in this specific field¹⁻⁴, and it is essential to explore strategies for minimizing negative impacts of oral surgery.

The aim of this study is to observe the perioperative discomfort resulting from oral surgeries, while also advancing the validation process of the QCirDental questionnaire. This later will be achieved through assessing test-retest reliability, split-half reliability, and exploring and proposing modifications to the internal structure of the questionnaire via exploratory factor analysis. Additionally, the study intends to present a translated versions in Spanish and English from the original Brazilian Portuguese.

Materials and Methods

Study design

This study was approved by the University's Human Research Ethics Committee under number 5.092.887 (<https://www2.uepg.br/propesp-cep/>) and registered at Brazilian Clinical Trials Registry (ReBEC) under the number RBR-33hrzwh. The study was characterized as observational, prospective and cross-sectional to observe

the perioperative discomfort resulting from oral surgeries and validation continuity of QCirDental questionnaire¹. The sample size was determined with careful consideration of the process of validating measures, which typically involves several steps, with construct validation being a pivotal aspect focused on assessing the internal structure of the instrument. To ensure the optimal formatting of the instrument's dimensions, an analysis requiring samples with over 300 subjects is imperative. Larger samples play a crucial role in stabilizing the component pattern, consequently reducing the likelihood of errors, enhancing the accuracy of population estimates, and facilitating broader generalization of results.

Patient selection

Patients were consecutively selected in accordance with established criteria for tooth extraction. The inclusion criteria for the study were based on indications for tooth removal, such as irrecoverable teeth due to cavities or periodontal disease, as well as endodontics, prosthetic, or orthodontic needs. Exclusion criteria included pediatric patients with indication for primary tooth removal and individuals who had undergone surgery for impacted third molars with moderate or great difficulty⁵.

The interviews were conducted by dental surgery students who had received research training and were not directly involved in the surgeries. These interviews took place in the immediate postoperative period. During the QCirDental application, the students who were directly involved in the surgeries were not present at the location. This absence allowed the patients to answer the interviewer more sincerely regarding their perception of the surgery.

Dental Extractions

Undergraduate dental students at the university's dental surgery clinics conducted all the exodontias. Stringent measures were taken to ensure strict control of microbiological contaminants throughout the procedures. This involved the utilization of sterile surgical aprons, sheets, towels, and gloves. Furthermore, all dental handpieces, burs, and surgical instruments were subjected to sterilization in an autoclave. Whenever necessary, sterile saline solution was employed to cool the drill and for washing and cleansing the surgical site.

Data Collection

A preoperative interview and anamnesis was firstly conducted. The self-declared anxiety levels was obtained by a verbal scale (0-4) as follows: none at all (0); a little (1); moderate (2); high (3) and; very high (4). The QCirDental was filled up immediately after the surgery. Additional data was collected concerning the surgery development, such as surgical time among other variables. The postoperative outcomes of pain and inflammatory complications were recovered after 7 postoperative days.

Pain Evaluation

Pain was self-reported on the seventh day after the surgery using a verbal category scale (VCS) with response options ranging from 0 to 3 (0 = none, 1 = mild, 2 = moderate, and 3 = severe). This method enabled patients to classify their pain

qualitatively or in terms of cognitive-evaluative dimensions throughout the entire postoperative period. It captured the patient's evaluation of memory and meaning associated with the pain, as well as the potential consequences and impact of the pain and injury¹. This simplified approach not only provides a general understanding of the intensity of pain but also considers factors beyond its intensity alone. It enables a more comprehensive understanding of the patient's pain experience, taking into account their subjective perception and overall evaluation of the pain's significance.

Translated Versions

The Spanish version of the QCirDental questionnaire was translated and semantically adapted by the first author, a native Spanish speaker (Cuban) and master's degree student. The English version was translated and adapted by the last author listed, and the semantic accuracy was reviewed by a native English speaker. It is important to note that the translated versions presented in this study are not culturally validated, thus requiring further research for validation.

Data analysis and Statistical Procedures

The JASP software (JASP Team, 2023, Version 0.17.2) and/or the JAMOVI software (JAMOVI project, 2022, Version 2.3) were employed to analyze the data through descriptive and inferential methods. A two-tailed probability of $P \leq 0.05$ was considered statistically significant. The variables were classified as continuous, ordinal, or nominal and the appropriate statistical tests were selected based on these characteristics, taking into account the normal or non-normal distribution of the variables and determined by the assumptions check tests. Eventual missing data were treated by sample mean and outliers by winsoring. Lack of sensitive data or non return of the diary were treated by case exclusion.

To assess the instrument's reliability, both the Test-Retest reliability and the Split-half reliability methods were employed. This analysis was conducted using the BioEstat 5.3® free software (BioEstat 5.3, Ayres M.; Ayres DL; Santos AAS; Brazil). To examine the internal structure of the questionnaire, an exploratory factor analysis was performed using JAMOVI software, through principal axis factoring method with orthogonal rotation (varimax). Additional analyses were conducted to explore the relationship between the questionnaire and several collected variables.

Results

Sample characteristics

The sample was composed of 432 dental surgeries, which included the removal of one to three teeth (1 tooth: 313, 72.5%/ 2 teeth: 85, 19.7%/ 3 teeth: 34, 7.9%). Patients were mostly female (246/ 56.9%) and the age ranged from 11 to 79 years old (Mean 40 ± 14). The self-declared anxiety levels of associated surgical procedure was as follows: none at all, 225 (52.1%); a little, 125 (28.9%); moderate, 48 (11.1%); high, 22 (5.1%) and; very high, 12 (2.8%).

The mean time of the surgical procedures was 35 (± 23) minutes and the applied techniques were classified as; (a) simple, using only elevators or forceps (285, 66%) or; (b) complicated, which demanded the confection of surgical flap (27.3%), ostectomy (9.3%) and, tooth sectioning (15.7%), however, only 19 (4.4%) surgeries demanded the three approaches together (surgical flap, ostectomy and tooth sectioning). The overall patient's postoperative pain experience in seven days was declared as: no pain at all (287, 66.5%), mild pain (82, 19%), moderate pain (54, 12.5%) and, severe pain (9, 2%). Dry socket occurred in 7 (1.6%) patients and alveolar infection was diagnosed in 4 (0.9%) patients.

Test-Retest reliability of the QCirDental

Considering the sum of all items, the first measure of the questionnaire (M1) showed a mean of 38 points (± 29) and the retest (M2, one week later) showed a mean of 43 points (± 31). In a zero (0) to ten (10) points scale (total scores divided by 20 - number of questions), M1 showed a mean of 1.9 while for M2 it was 2.1 points. The test-retest was obtained from a fraction of $\sim 10\%$ of the examined population, who answered twice the QCirDental. The reliability statistics showed a Cronbach's Alpha of .93 (CI: .86 to .96); the intra-class correlation coefficient for single measure was .86 and for the average measure was .92. The average inter-item correlation was .87. The concordance correlation coefficient between both measures was .86 (C.I. .74 to .92), Shieh Test of Agreement non-significant (the absence of a significant difference or bias between the two measurement indicates that they are in good agreement). The Bland-Altman Statistics (raw) showed $t = -1.8$, $p > 0.05$ (There is no systematic difference between the two methods).

The split-half reliability method was used through computer random items generated (Bioestat 5.3, Belém, Pará, Brazil) to split the questionnaire into two. One axis included the items (first) 1, 3, 5, 7, 9, 10, 11, 12, 15, 16, and the other axis (second) used the remaining items. It was observed that the first and second axis showed highly significant correlations with the total score (QCirDental total sum) of the sample (First: Spearman's Correlation 2-tailed, $r = .92$, $p < .001$; Second: $r = .92$, $p < .001$), as well as highly significant correlation between the first and second axis of the items (Spearman's Correlation 2-tailed, $r = .73$, $p < .001$). The intra-class correlation coefficient for split-half was .88 (average measure) and .78 (single measure).

Exploratory Factor Analysis

An exploratory factor analysis was used to identify how the internal structure of the questionnaire was organized and how it can be reduced in a set of dimensions (or factors). The analysis was conducted by the principal axis factoring method with orthogonal rotation (Varimax), which yielded two factors and excluded one question (question 20 - The feeling of having lost my tooth/teeth, nevertheless, due to a high uniqueness (0.89) the question was kept as a third or additional factor named Feeling of Loss (Patient Experience of Dental Loss). Question 13 (The surgeon's difficulty in completing the surgery), loaded similarly in both factors, and due to its content, it was decided to keep the question on factor 2. The analysis seems to differentiate mostly physical feelings from other general surgical perceptions and due to this,

factor 1 was then called Physical Feelings (Dental Surgery Experience and Physical Feelings) and factor 2 was named General Perceptions. Table 1 describes the new structure of the QCirDental based on these three domains, Physical Feelings, General Perceptions and Feeling of Loss as well as the percent of positive impact answers for discomfort for each question. Table 2 shows the pairwise correlations between the total sum of the QCirDental and the sum of its domains. The results reported on table 2 shows that factor 1, or Physical Feelings Domain, is the one that best represents the full questionnaire with an almost perfect correlation (Spearman's rho $\sim .95$, $p < .001$) which, theoretically imply that the questionnaire could be reduced to that set of questions (11 questions; originally 1-9, 17, 18) (table 2), nevertheless, General Perceptions and Feeling of Loss domains give us additional and complimentary information.

Table 1. Domain's structure of the dentoalveolar surgery self-perception questionnaire (QCirDental) based on exploratory factor analysis, the percent of positive discomfort impact answers for each question and the mean sum of the scores (n. 432).

	Dimension 1 (Factor): Dental Surgery Experience and Physical Feelings	Loadings	% of positive impact	Mean of total sum scores
PF.1	1. I felt nervous during the surgery	.64	44.6	2.0
PF.2	18. I felt distressed during the surgery	.63	23.8	0.9
PF.3	9. The surgery time (The length of time the surgery took)	.59	15.7	0.5
PF.4	4. The impression I had of the wounds in my mouth (bruises and cuts)	.57	23.8	0.8
PF.5	6. The pain I felt during the anesthesia	.56	40.2	1.3
PF.6	3. The fluids and blood in my mouth	.55	28	1.0
PF.7	7. The pain I felt during the surgery	.52	29.3	1.0
PF.8	8. The sounds and noises of surgical instruments	.51	18.5	0.6
PF.9	2. The comments the dentists made during my surgery	.51	13.9	0.4
PF.10	17. The materials or instruments they put in my mouth	.46	17.1	0.5
PF.11	5. I was afraid of anesthesia	.45	32.4	1.5
	Dimension 2 (Factor): General Perceptions			
GP.1	11. The dentist's lack of delicacy or care towards me during the surgery	.75	7.8	0.2
GP.2	15. The place, the surgical environment or atmosphere of the clinic	.67	7.8	0.2
GP.3	10. The lack of explanation of what was happening during the surgery	.62	8.1	0.2
GP.4	14. During my surgery, I felt my privacy invaded (intimity)	.61	5.1	0.1
GP.5	19. The lack of explanations after finishing the surgery	.60	6.4	0.2
GP.6	12. I felt outraged during the surgery (for any related reason)	.59	5.5	0.1
GP.7	13. The surgeon's difficulty in finishing the surgery	.43	17.8	0.5
GP.8	16. The different smells (for any related reason)	.41	10.6	0.3

Continue

Continuation

Dimension 3 (Factor): Feeling of Loss (Patient Experience of Dental Loss)				
DL.1	20. The feeling of having lost my tooth or my tooth/teeth	.89	34.7	2.0
Total % of positive discomfort			75.9	
Mean of the total sum of no-yes discomfort impact answers (0-1 per question scale)			3.9	
Mean of the total sum of the scores (0-10 per question scale)			15.0	

Table 2. Pairwise correlations between the total sum of the dentoalveolar surgery self-perception questionnaire (QCirDental) and its variant of yes or no total sum and its domains Physical Feelings, General Perceptions and Feeling of Loss (Two-tailed Spearman's Correlations) (n.423).

QCirDental	QCirDental Domains	Spearman's rho	p
QCirDental TOTAL	Physical Feelings	.95	< .001
QCirDental TOTAL	General Perceptions	.61	< .001
QCirDental TOTAL	Feeling of Loss	.55	< .001
QCirDental TOTAL	Yes or No Total sum	.92	< .001
Yes or No Total sum	Physical Feelings	.90	< .001
Yes or No Total sum	General Perceptions	.68	< .001
Yes or No Total sum	Feeling of Loss	.50	< .001
Physical Feelings	General Perceptions	.55	< .001
Physical Feelings	Feeling of Loss	.34	< .001
General Perceptions	Feeling of Loss	.30	< .001

Exploring the Questionnaire and Analysis

There is no absolute rule to explore the data and meaning of the questionnaire. It could be used as the total sum of the QCirDental or by the domains above described or eventually any question of interest. The 0-10 question scores of the scale could be also dichotomized as 0, or no impact or "none discomfort" and 1, for any other value interpreted as "discomfort present". These 0-1 scores (No or Yes, respectively) can also be added for each question and can give an idea of how much of the positive answers occurred to each patient (0-20 positive scores or by domains accordingly). As suggestion, the 0-10 scale may also be discretized to an ordinal 5 scores scale as follows: 0 or no discomfort at all; 1-2 little discomfort; 3-4 mild discomfort; 5-7 moderate and; 8-10 high to very high discomfort. This verbal scale can bring additional meaning to the discomfort felt by the patients.

Questionnaire associations with anxiety and demographic aspects

No differences were observed between QCirDental and domains, considering gender, declared or observed chronic diseases or use of daily medicine including contraceptives. Nevertheless, the age of the patient was weakly negatively correlated with

QCirDental and Physical Feelings domain (respectively, Spearman's rho $-.14$ $p = .002$; $-.14$ $p = .002$), indicating that younger patient may feel more distressed during the surgery. The self-declared state of anxiety showed to be associated with QCirDental, Physical Feelings and Feeling of Loss domains (respectively, Spearman's rho $.28$ $p < .001$; $.29$ $p < .001$ and; $.1$ $p = .03$) and this imply that more stressed patients may have a poorer general experience in oral surgery and gives greater value to tooth loss. A secondary analysis showed that the anxiety may have been responsible for ~5% of the variance of the QCirDental (Linear Regression, $R^2 .052$, $p < .001$). Smoker patients showed less complaints compared to non-smokers with QCirDental and Physical Feelings (respectively, mean scores 10 against 16, Mann-Whitney Test $p = .01$; mean scores 8 against 11, Mann-Whitney Test $p = .02$).

Questionnaire associations with surgical factors

The surgical time showed positive correlation with QCirDental, Physical Feelings and General Perceptions domains (respectively, Spearman's rho: $r_s .22$ $p < .001$; $r_s .21$ $p < .001$ and; $r_s .21$ $p < .001$). The complexity of the surgery (scored by the necessity and performance of surgical flap, ostectomy and, tooth sectioning) also showed positive correlation with QCirDental, Physical Feelings and General Perceptions domains (respectively, Spearman's rho Correlation $r_s .21$ $p < .001$; $r_s .22$ $p < .001$ and; $r_s .20$ $p < .001$). The increase of the volume of local anesthesia was associated with QCirDental, Physical Feelings and General Perceptions domains (respectively, Spearman's rho Correlation: $r_s .2$, $p < .001$; $r_s .23$ $p < .001$ and; $r_s .1$ $p < .02$).

A weak but significant positive correlation between the self-declared postoperative pain with QCirDental, Physical Feelings and General Perceptions domains (respectively, Spearman's rho: $r_s .17$ $p < .001$; $r_s .18$ $p < .001$ and; $r_s .12$ $p = .009$). A complimentary linear regression analysis showed that, within the studied data QCirDental was the best postoperative pain predictor (Linear Regression $p < .001$, $R^2 = 3\%$) and between domains only the Physical Feelings showed to be a postoperative pain predictor (Linear Regression $p < .001$, $R^2 = 3\%$).

Discussion

A comprehensive understanding of the patient's transoperative experience is crucial for improving the quality of care and enhancing patient-centered outcomes in oral surgery. Unfortunately, transoperative period has received scant attention¹⁻⁴, as the focus has primarily been directed towards anxiety and pain control, as well as addressing postoperative discomforts such as pain, edema, trismus, and inflammatory complications⁶⁻¹³. During this phase of the treatment, patient's are vulnerable both physically and emotionally due to the exposure to a variety of stressors, including the unfamiliar surgical environment, the use of medications and anesthesia, and the physical sensations associated with the procedure. These factors can contribute to heightened anxiety, fear, and distress, potentially leading to negative psychological consequences^{14,15}. Therefore, it is crucial to acknowledge that the transoperative phase plays a significant role in shaping the overall patient experience and outcomes.

In order to mitigate the effects of anxiety, pain and complications while enhance the overall comfort of patients, various alternatives have been studied^{11-13,16}. These alternatives include psychological distraction interventions¹³, different pharmacological protocols^{11,12,16}, different preoperative information techniques¹⁷, among others¹⁸, which aim to improve mental and/or physical well-being by counteracting the negative impacts associated with the surgical procedure. The use of questionnaires such as QCirDental provides a standardized and structured method for systematically collecting data on various aspects of the patient experience. It goes beyond solely measuring pain and anxiety, allowing researchers to capture a broader range of factors that may influence the patient's well-being and overall satisfaction.

The results obtained from this study provide evidence supporting the validity and reliability of QCirDental as an instrument for assessing the transoperative period. Test-retest and split-half analyses confirm the questionnaire's consistency and stability over time, demonstrating its reliability in capturing the patient's experience during oral surgery. Moreover, the study's findings shed light on the meaningful structure of QCirDental, revealed through exploratory factor analysis. This analysis identified three distinct dimensions that contribute to a comprehensive understanding of the patient's experience. The first dimension, labeled "Dental Surgery Experience and Physical Feelings," encompasses questions related to the surgical procedure itself and the physical sensations experienced by the patient. This dimension may serve as a representative subset of the entire questionnaire. This implies that a condensed version comprising the 11 questions from Dimension 1 (originally 1-9, 17, 18) could be used effectively. However, it is important to note that the additional dimensions also provide valuable insights and contribute to a more comprehensive understanding of the discomforts resulting from oral surgery.

The second dimension, "General Perceptions," encompasses a wide range of factors that contribute to the patient's overall perception and experience. This dimension encompasses aspects such as patient privacy, the physical environment, the surgical setting, the level of care provided by the dentist, and other non-physical sensations. By including this dimension, the questionnaire captures the multifaceted nature of the patient's experience during oral surgery.

Lastly, the third dimension, "Feeling of Loss (Patient Experience of Dental Loss)," explores the emotional aspects tied to dental loss, which proves particularly valuable in cases where the loss of teeth significantly affects the patient's physiology, functionality, or appearance. Understanding and addressing the emotional impact of dental loss is crucial, as it can have profound implications on the patient's overall well-being and quality of life. These dimensions structure of the QCirDental allows for a comprehensive evaluation of various aspects of discomfort, enabling researchers and healthcare professionals to gain deeper insights into the factors influencing the patient's well-being.

When exploring the relationship between QCirDental and surgical variables in this study, the questionnaire revealed associations that linked increased transoperative complaints with extended surgical time, the complexity of the surgery, and the greater amount of local anesthesia utilized. These findings suggest that these

factors play a significant role in influencing the level of discomfort experienced by patients during oral surgery. Cortisol, a stress hormone found in body fluids such as saliva, has been identified as a marker of physiological stress during oral surgeries. It has been observed that greater surgical time in third molar surgeries is associated with an increase in salivary cortisol levels¹⁶. Similarly, the QCirDental questionnaire, employing a different approach, also revealed that prolonged surgical time serves as a measure of both discomfort and psychological stress for patients. These findings are consistent with the physiological stress marker of salivary cortisol¹⁶ and provide further evidence of the impact of surgical duration on the patient's overall experience as well as for the validity of the QCirDental.

An independent group² analyzed patient perception of surgical discomfort (QCirDental) in third molar surgery and the association with clinical variables and polymorphisms associated with the FKBP5, SLC6A4, and COMT genes. FKBP5 gene has been linked to response to post-traumatic stress, anxiety, and depressive disorder and, interestingly, that study² observed that individuals with AA genotype of the rs3800373 polymorphism in the FKBP5 gene reported the greatest surgical discomforts. In addition, it has been extensively demonstrated that dental anxiety is associated, at some extent, with more intense and prolonged pain during and after dental treatment and oral surgery^{6-8,18-20}. Our study also observed an association between pre-surgery self-reported levels of anxiety and increased surgical discomfort, which in turn, this transoperative discomfort also impacted in the postoperative pain experienced by the patients. These results further support the reliability and utility of QCirDental as a valuable tool for assessing patient experiences during oral surgeries, specifically in identifying the association between discomfort and both anxiety and pain.

Study Limitations

This study may have limitations, primarily due to its observational design, which focused on validating and exploring a new questionnaire for evaluating the transoperative period in oral surgery. Such studies inherently possess limitations such as lack of control over variables implying in limited ability to measure and control for many confounders. Another limitation relates to the absence of a comparable adapted and validated questionnaire in Brazilian Portuguese, which could have provided concurrent validity. The representativeness of the surgical sample may also be limited, as the study only included dental extractions. Including other types of dentoalveolar surgeries in future research would enhance the generalizability of the findings.

Conclusions

In summary, the findings of this study provide valuable insights into the factors influencing patient discomfort during oral surgeries. This research also advanced the validation process of QCirDental, confirming its reliability as an measurement instrument for oral surgical discomfort. Additionally, it revealed the internal structure of QCirDental, comprising three distinct dimensions (Physical Feelings; General Perceptions; Patient Experience of Dental Loss). It is noteworthy that Physical Feelings dimension plays a significant role in capturing the physical sensations and

distress experienced during the surgery and could potentially function as a stand-alone subset. However, all dimensions contribute to a more comprehensive understanding of the patient's experience and the discomforts associated with oral surgery. It is important to emphasize that factors such as communication, comfort, trust, and emotional well-being during the surgical procedure can greatly influence the patient's perception and overall satisfaction with the treatment. Future research should focus on validating translated versions of the QCirDental questionnaire across different cultural contexts and exploring strategies to minimize the negative impacts of oral surgeries.

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Competing interests

The authors declare no conflict of interest and disclose any commercial associations, current and within the past five years, that might pose a potential, perceived or real conflict of interest.

Ethical approval

This study was submitted and approved by the University's Ethical Committee for Human Research under the number 5.092.887 (<https://www2.uepg.br/propesp-cep/>) and informed consent was obtained from all study participants. The Brazilian Clinical Trials Registry (ReBEC) can be accessed at: <https://ensaiosclinicos.gov.br/rg/RBR-33hrzwh>

Data Availability Statement

Data are available on request from the corresponding author upon reasonable reason.

Author Contribution

Vanessa Carvajal Soto contributed to the conception and design of the study, data analysis, and drafting of the article; contributed to the acquisition of clinical data and critical revision of the manuscript. **Amanda Maria Pedroso, Renan Bordini Cardoso, Ramon Cesar Godoy Gonçalves,** and **Roberto de Oliveira Jabur** contributed to the acquisition of clinical data and critical revision of the manuscript.

Marcelo C. Bortoluzzi: contributed to the conception and design of the study, data analysis, and drafting of the article. All authors contributed to and approved the final version of the manuscript.

Questionnaires Versions in Brazilian Portuguese and Spanish can be obtained under request at mbortoluzzi@uepg.br.

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SELF-PERCEPTION QUESTIONNAIRE OF DENTOALVEOLAR ORAL SURGERY (QCirDental / SPQ-DOS)

Name:

Type of surgery (example: lower third molar):

Try to classify **what BOTHERED you the most** during the surgery in your mouth, according to the question”

USE THE SCALE, and select a number that best corresponds to how you felt.

0	1	2	3	4	5	6	7	8	9	10	
<hr/>											
It did not bothered me at all (none)	Slightly or a little	Mild	Moderate								It bothered me so much, high or very high
<hr/>											
DENTAL SURGERY EXPERIENCE AND PHYSICAL FEELINGS										0-10	
1	1. I felt nervous during the surgery										
2	18. I felt distressed during the surgery										
3	9. The surgery time (The length of time the surgery took)										
4	4. The impression I had of the wounds in my mouth (bruises and cuts)										
5	6. The pain I felt during the anesthesia										
6	3. The liquids and blood in my mouth										
7	7. The pain I felt during the surgery										
8	8. The sounds and noises of surgical instruments										
9	2. The comments the dentists made during my surgery										
10	17. The materials or instruments they put in my mouth										
11	5. I was afraid of the anesthesia										

AND THIS
BOTHERED
ME...

GENERAL PERCEPTIONS		
12	13. The surgeon's difficulty in finishing the surgery	
13	11. The dentist's lack of delicacy or care towards me during the surgery	
14	15. The place, the surgical environment or atmosphere of the clinic	
15	10. The lack of explanation of what was happening during the surgery	
16	14. During my surgery, I felt that my privacy was invaded (intimity)	AND THIS BOTHERED ME...
17	19. The lack of explanations after finishing the surgery	
18	12. I felt outraged during the surgery (for any related reason)	
19	16. The different smells (for any related reason)	
FEELING OF LOSS (PATIENT EXPERIENCE OF DENTAL LOSS)		
20	20. The sensation of having lost my tooth/teeth	

Would you like to make any other comment?

Forms of Analysis

Sum of all items (Scalar values):

Sum of items by domain (domains seem to explore different dimensions of complaint - Scalar values):

Values transformed into dichotomous data (with totals from 0-20):

Ordinal values: