

Revista Clínica de Periodoncia, Implantología y Rehabilitación Oral

Patient experience and non-surgical periodontal therapy in a postgraduate periodontal training program: A qualitative study.

Journal:	<i>International Journal of Interdisciplinary Dentistry</i>
Manuscript ID	REVISTA-2020-0129.R1
Manuscript Type:	Original Article
Date Submitted by the Author:	22-Jan-2021
Complete List of Authors:	Prieto, Diego; Universidad de los Andes, Facultad de Odontología Vasquez, Pamela; Universidad de los Andes, Facultad de Odontología Ortega, Miguel; Universidad de los Andes, Facultad de Odontología Caceres, Felipe; Universidad de los Andes, Facultad de Odontología Meléndez, Catalina; Universidad de los Andes, Facultad de Odontología Nally, mauricio; Universidad de los Andes, Facultad de Odontología Jazanovich, Diego; Universidad Finis Terrae, Facultad de Odontología
Keywords:	periodontitis, periodontal therapy, qualitative research

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Manuscripts

Title

Patient experience and non-surgical periodontal therapy in a postgraduate periodontal training program: A qualitative study.

Financial support

This study did not receive any financial support.

Running Title

Patient experience and periodontal therapy

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ABSTRACT

Objective: To explore patient experience for non-surgical periodontal therapy using phenomenography.

Methods: This qualitative study was performed in a postgraduate specialist training program in periodontics. Patients reported their experiences through in-depth interviews in order to recognize the impact of non-surgical periodontal therapy on their quality of life and their satisfaction. A homogeneous sampling procedure was used, establishing redundancy after the fifteenth interview. Interviews were audio recorded, transcribed and analyzed by three researchers who codified the answers into categories to determine the emerging topics.

Results: The core emerging themes were: (i) lack of information about periodontal disease; (ii) experience during treatment; (iii) treatment implications; and (iv) clinician–patient relationship.

Conclusions: Patients seem to have limited knowledge about periodontal diseases. Reasons for attendance mainly include bleeding gums, tooth mobility, and aesthetic problems. Therapy can generate pain, fear, and is considered invasive, whereas dentine hypersensitivity may occur post-operatively. Despite this, patients would be willing to undergo treatment again and were generally satisfied with the level of care and treatment received.

KEY WORDS: periodontitis, periodontal therapy, qualitative research

INTRODUCTION

The American Academy of Periodontology (AAP) and the European Federation of Periodontology (EFP) have recently classified periodontal diseases and conditions in three main groups: periodontal health, gingival diseases and conditions; periodontitis; and other conditions affecting the periodontium^(1,2). Periodontitis is characterized by microbially-associated, host-mediated inflammation resulting in loss of periodontal attachment. This is detected as clinical attachment loss (CAL) by circumferential assessment of erupted teeth using a standardized periodontal probe with reference to the cement-enamel junction (CEJ)⁽³⁾. Periodontal diseases are common and their prevalence varies in different populations⁽⁴⁾. An epidemiological study in Chile reported periodontitis in 93.45% of adults aged between 35 and 44 years and 97.58% of adults between 65 and 77 years of age⁽⁵⁾.

The long-term success of periodontal therapy has been studied widely and research fundamentally alludes to measurable clinical parameters such as probing depth, CAL, periodontal furcation involvement, bleeding on probing, tooth mobility and tooth migration. However, most of these parameters do not have a real impact on patient expectation, nor biopsychosocial implications⁽⁶⁻⁸⁾.

There has been a greater interest recently within the scientific community to involve patients in their own healthcare and treatment decisions. Several studies have focused on patient perception and various instruments have been developed to assess whether oral diseases and conditions influence quality of life. Despite an increase in dental practitioners' interest, this scenario has also challenged the interpretation and communication of results⁽⁹⁾.

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3 Quantitative tools for measuring satisfaction parameters include surveys such as the
4 Oral Health Impact Profile (OHIP-49), which are widely used in these types of study.
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6 OHIP-49 is one of the most realistic and comprehensive instruments to evaluate oral
7 health. It is based on a “disease/condition-deterioration-disability” model, comprising
8 seven domains: functional limitation; pain; discomfort; physical incapacity;
9 psychological incapacity; social incapacity; and other disadvantages. Its 49 questions
10 measure the frequency and severity of oral problems concerning physical, social, and
11 psychological wellness^(9,10).
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24 In addition, qualitative research contributes to several disciplines by describing,
25 interpreting, and theorizing about social interactions and experiences occurring both
26 under natural and experimental conditions. This area of knowledge aims to understand
27 perspectives and experiences, either individually or for groups of people and their local
28 contexts, helping to grasp problems and their meaning from people’s different points
29 of view. Open interviews and discussion groups are used to allow participants to
30 express their own opinions until a saturation point is reached and all the information is
31 collected⁽¹¹⁾.
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44 There is limited information concerning dental patients’ perceptions of their periodontal
45 status, treatment outcomes, and impact on their quality of life. Further, most research
46 in this field is related to diagnosis and disease impact, but not the actual treatment
47 itself. The aim of this study is to explore patient experience for non-surgical periodontal
48 therapy using a phenomenological approach.
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STUDY POPULATION AND METHODOLOGY

Design and Ethical approval

A descriptive qualitative study using a phenomenography was carried out by the postgraduate periodontics specialist training program at the Faculty of Dentistry, Universidad de los Andes, Santiago, Chile. This project was approved by the University's Scientific Ethics Committee (no. CEC201805).

Context of the study

Postgraduate students enrolled in the Periodontics Specialist Training Program at Universidad de los Andes have been treating patients since 2009. The program comprises 5 part-time semesters and focuses on the prevention, diagnosis and treatment of periodontal and peri-implant diseases, such as periodontitis.

Participants

A printed list was requested from the clinical records office of all patients treated for non-surgical periodontal therapy from 2017 till 2018 at our Faculty of Dentistry. All patients treated were invited to participate in this study and were contacted by telephone call. Participants who agreed to take part in our study signed a consent form before their interviews.

In-depth interviews

In-depth interviews were used and flexible guides developed to investigate all emerging themes and enquire in greater depth to clarify any answers. A homogeneous sample was used and estimated at 20 participants. All the interviews were performed by two researchers: one interviewed all participants (PV) while the other (MO)

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3 recorded the interview using two digital audio recording devices, in a quiet private
4 room fit for purpose. Interviews took place between August and September 2018.
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6 Interviews ranged from 20 to 30 minutes and feedback was given to participants when
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8 necessary by the interviewer. Field notes were taken during the interviews as a means
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10 of backup. None of the participants knew neither of the interviewers and vice versa.
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12 Audio recordings were transcribed immediately after each session of interviews by one
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14 researcher (MO). The interviewer (PV) was not a specialist in periodontics with no
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16 specialist knowledge, no assumptions, reasons, nor interests in the research topic.
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24 **Transcription and data analysis**

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26 As data were collected, information was analyzed simultaneously until a saturation
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28 point was reached. Redundancy was established after the fifteenth interview. Through
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30 repeated reading of transcripts, frequently emerging themes were identified, and
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32 potential interview problems were detected and corrected. Data were analyzed by two
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34 researchers (DP and FC) through the following stages:
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- 40 I. Detection of emerging themes through repeated reading of transcripts and
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42 elaboration of typologies to find first and second-order constructions guiding
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44 the development of concepts and prepositions.
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- 46 II. Data coding consisting of a systematic method to develop and refine the
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48 interpretation of information obtained in the previous step.
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- 51 III. Interpretation of data in the context they were obtained, considering if they
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53 were requested, or not; whether or not the interviewer had any influence on
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55 participants' answers; and the effect of our own assumptions.
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3 Researcher triangulation was used to avoid a risk of bias. Validation of information by
4 two researchers (DP and FC) was further validated by a third researcher (CM). For
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6 situations where any themes were unclear, a new interview would have been
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8 considered. This, however, was not necessary in our study. The sampling and analysis
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10 flowchart are illustrated in figure 1.
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19 **RESULTS**

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21 All 15 interviewees (8 females and 7 males) were 32 to 78-year-old adults (mean 53.13
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23 \pm 13.22 years) with periodontitis. Four emerging themes were identified following
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25 repeated readings of transcripts: (i) lack of information about periodontal disease; (ii)
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27 patient experience during treatment; (iii) treatment implications; and (iv) clinician–
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29 patient relationship. All the emerging themes and subcategories are illustrated in table
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38 **(i) Lack of information about periodontal disease**

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40 Most of the interviewed patients reported their reason for attendance was not due to
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42 periodontal disease treatment. Interestingly, their reasons for attendance were mainly
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44 focused on aesthetics, pain, and discomfort. Periodontitis was diagnosed at the
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46 faculty's Diagnostic Clinic before patient referral to postgraduate specialist training
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48 students for treatment. Patients were subsequently informed about the presence of
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50 their periodontal disease and the need for periodontal treatment. A patient said, "Well
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52 I knew that the specialists knew what they were doing, I just wanted to have my mouth
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54 in good condition." (78-year-old man). Some patients were surprised because they did
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56 not know of the existence of periodontal disease. Others could relate periodontitis to
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3 some of their symptoms such as tooth mobility, bleeding during tooth brushing, tooth
4 migration, and halitosis. Another patient reported, “At first I had a problem with my
5 gums. When I cleaned my teeth, they bled a lot. It stopped for just a few days and then
6 started all over again.” (67-year-old man).
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13 14 15 **(ii) Perioperative experience**

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17 Several patients associated periodontal treatment with feelings of anxiety, pain and
18 discomfort, and resigned themselves before undergoing dental treatment. Another
19 patient told us: “I was nervous before the procedure in my mouth, then I felt pain for
20 some moments, but it was manageable.... I thought it was my fault for not taking good
21 care of myself, so this is for my own good” (41-year-old man). Another patient said: “at
22 the beginning, it was hard to understand why my gums were being scraped, but after
23 while I got used to it and even asked for more local anesthesia when it hurt, without
24 any fear” (51-year-old man). One patient pointed out the comprehensive approach to
25 her treatment: “It is much better than I expected because when I went to the public
26 healthcare system, they treated me for only 20 minutes, but here I had about five
27 sessions as far as I remember, cleaning tooth by tooth with anesthetic, so she [the
28 dentist] had a lot of work with me” (62-year-old woman). Another patient talked about
29 her positive experience of treatment: “Actually the treatment was very rewarding. I
30 used to have my teeth cleaned once a year, but never as deep as this.” (64-year-old
31 woman).
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54 **(iii) Treatment implications**

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56 Almost all patients reported dental hypersensitivity after treatment sessions with
57 different duration and stimuli: “Well, I had some dental sensitivity, but it didn’t last
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3 long... just for three to four days, because I can tolerate pain quite well” (62-year-old
4 woman). Another participant added: “I don’t have much sensitivity, but I still have my
5 tea not too hot and not too cold either. Until now I can tolerate hot things better, but
6 I’m not having any treatment at the moment” (51-year-old woman). Someone else
7 reported: “I had some sensitivity at first, but I had been told it was to be expected.
8 Changes between hot and cold, like drinking water, felt painful” (51-year-old man).
9 Only one patient did not refer to any postoperative pain at all: “I didn’t feel the
10 difference. The only thing that I noticed was food retention between my teeth.” (78-
11 year-old man).
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26 **(iv) Clinician–patient relationship**

27 Generally, patients described good relationships with their dentists, and mentioned
28 their empathy towards them. Clinicians were caring throughout periodontal treatment:
29 “I felt that she was very concerned about me. I don’t know why she was so kind,
30 considering I’m just a patient. I felt that my case was important to her.” (41-year-old
31 woman). Another participant told us: “I had a great experience because my dentist
32 was really good. They were always concerned about me checking that everything was
33 OK. I really appreciate that, so my experience was wonderful...” (47-year-old woman).
34 Patients also described the treatment environment as a trustworthy and supportive
35 space: “...very good. They supported and helped me a lot. I was depressed at the time
36 and [whimpers] ... They helped me with my teeth.” (58-year-old woman). Someone
37 said: “My dentist was never alone. She was always asking her clinical tutors about my
38 treatment and how it was going. She always checked if in doubt.” (64-year-old
39 woman).
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DISCUSSION

The interviews conducted in this study allowed to determine the different visions that patients have about periodontitis, periodontal treatment, and the consequences entailed. Regardless of age or gender, many of the opinions and the experiences were similar between the different participants. Some authors suggest that the strategic selection of a specific group of individuals with periodontitis is useful for understanding psychosocial processes with periodontal conditions even when it is not always possible to extrapolate the results in all cases⁽¹²⁾.

It is important to bear in mind that qualitative studies do not aim to generalize results to the population at large. However, it is important to consider that different socio-economic and educational conditions do influence the prevalence, incidence, and progression of periodontal diseases, including the Chilean population^(5,13,14). Differences in social status may affect patients' experience after periodontal treatment, as some authors have proposed^(8,15). Given the sample in this study was quite homogenous, it is hard to determine whether socio-economic status did influence patients' periodontal treatment experience or not.

Regarding participants' lack of knowledge of periodontal diseases —particularly with reference to its diagnosis— participants did not know of the existence of this pathology, they were surprised to learn that they had it, and had left the responsibility to specialists in the management of their oral healthcare. This suggests a somewhat limited access to information within the general population from healthcare professionals from the moment periodontal disease is diagnosed. Results from this

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3 study are in agreement with those reported by others in the literature^(12,16). However,
4 these cannot be generalized given the participants in this study belonged to a
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6 postgraduate specialist training program in periodontics.
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12 In terms of participant perioperative experiences, these were described as painful and
13 exhausting, but patients resigned themselves to undergo periodontal treatment
14 because they perceived that not doing so would eventually lead to tooth loss. Stenman
15 et al. also documented feelings of patient anxiety and uncertainty, but these were
16 directly related to future dental problems perceived by patients despite some of them
17 feeling confident that their periodontal condition was under control to avoid a similar
18 situation later on⁽⁸⁾. Fardal and Hansen reported that approximately 12% of patients
19 referred for periodontal treatment were considered highly anxious. The main reason
20 for their anxiety was fear of pain and previous bad experiences. Despite this, anxiety
21 levels decreased as periodontal therapy progressed⁽¹⁷⁾. Recently, Horne et al. using a
22 qualitative approach found that it was not unusual for participants to have had avoided
23 dental care prior to seeking treatment. Reasons for this included high cost, fears
24 related to previous negative experiences, embarrassment, or no perceived need⁽¹⁵⁾.
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45 According to other previously published data^(7,12,16), this study concurs with the most
46 frequent periodontal treatment implications: dental hypersensitivity, pain, and
47 discomfort, especially in relation to temperature changes.
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53 Clinician-patient relationship was reported to be good, and participants felt confident
54 they were given the opportunity to ask questions and resolve any doubts regarding
55 their periodontal status, or general health, which has already been reported in the
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3 literature⁽⁸⁾. However, another study highlights that patients feel that information about
4 their health status is delivered late, suggesting patient motivation and support is the
5 responsibility of clinicians⁽¹⁶⁾.
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12 Another problem **perceived in this study** was the difficulty of patients in identifying and
13 explaining exactly what and how they felt, describing their condition, and
14 understanding the treatment, which may be influenced by educational level. In a
15 previous epidemiological study, one of the risk indicators for CAL was educational
16 level. A lower level of education might be related to poorer oral hygiene, lower
17 frequency of dental check-ups and decreased dental health cover⁽⁵⁾.
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29 There was a noticeable lack of participant knowledge regarding periodontitis as a
30 chronic pathology and the need to establish long-term periodontal support therapy to
31 educate patients and prevent disease progression. Some studies suggest that when
32 individuals attend dental examinations on a regular basis, they need to receive dental
33 education about periodontitis (e.g., periodontal pockets, bleeding gums, and tooth
34 mobility)^(8,12). In doing so, some patients may show more interest in seeking
35 information about their periodontal condition and getting to know their situation
36 better⁽¹⁶⁾.
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49 **Despite the fact that the sample in this study is not sufficiently heterogenous, there are**
50 **few studies available worldwide which address qualitatively the perception of patients'**
51 **experiences in periodontics. However, though ungeneralizable, the opinions expressed**
52 **by participants in this study may signal areas for further research in this field.**
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CONCLUSION

Patient quality of life can be affected by periodontal diseases and its treatment. Reasons for attendance mainly include bleeding gums, tooth mobility, and aesthetic problems. However, patients seem to have limited knowledge about periodontal diseases. Periodontal therapy can generate pain, fear, and is considered invasive, whereas dentine hypersensitivity may occur post-operatively. Despite this, patients treated at postgraduate specialist training level in this study would still be willing to undergo treatment again and were generally satisfied with the level of care and treatment received

The results from this qualitative study cannot be extrapolated to the population at large, but seem to suggest that there might be a need for dental schools to promote more education about periodontal diseases for the public and patients alike. Educating patients about consequences and treatment options for periodontal diseases is paramount to strengthen and foster good dentist-patient relationships, and help alleviate the burden and anxiety of clinical procedures and their postoperative effects.

CLINICAL RELEVANCE

Scientific rationale for study

There is a lack of information regarding the perception of patients towards periodontal treatments.

Principal findings

Patients seem to have limited knowledge about periodontal diseases and they report periodontal therapy can generate pain, fear, and is considered invasive, whereas

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3 dentine hypersensitivity may occur post-operatively. Despite this, patients would be
4 willing to undergo treatment again and were generally satisfied with the level of care
5 and treatment received.
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10 **Practical implications**

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12 This study provides valuable information in the way non-surgical periodontal treatment
13 is perceived by patients, allowing clinicians to understand better the reality patients
14 face and enabling better decision-making processes. Changes in clinical behavior
15 such as improving patient education can lead to a more rewarding patient experience.
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23 **CONFLICT OF INTEREST**

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25 The authors declare that they have no conflicts of interest.
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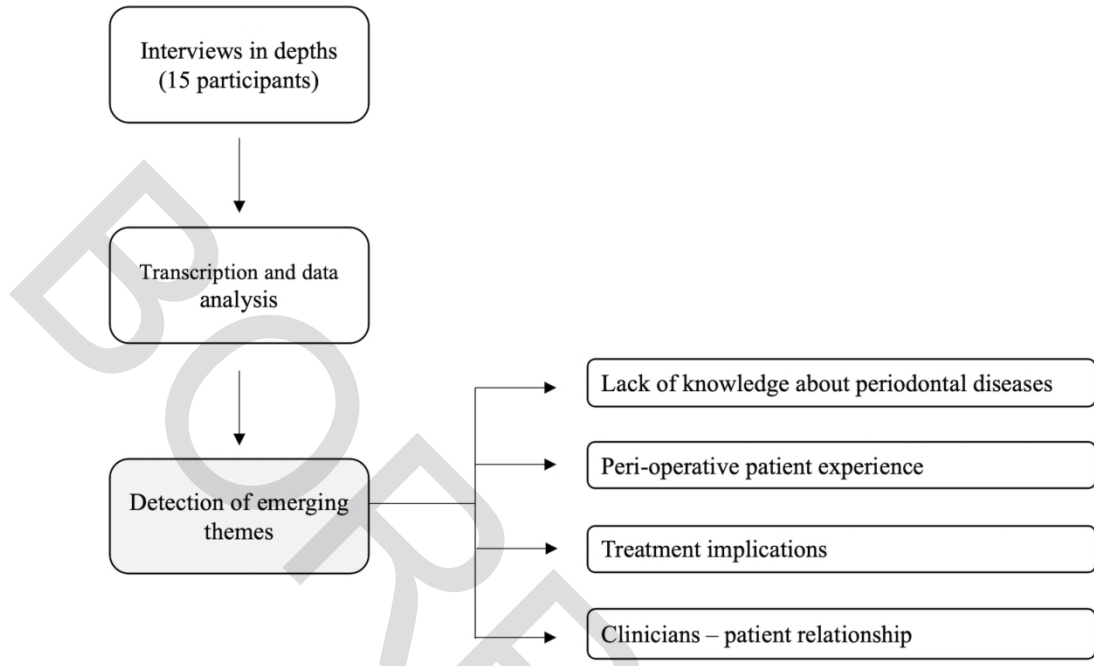
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TABLE 1 Emerging themes and their subcategories with examples provided by participants

FIGURE 1 Sampling and analysis flowchart





Sampling and analysis flowchart

162x108mm (300 x 300 DPI)

TABLE 1 Emerging themes and their subcategories with examples provided by participants

Emerging themes	Subcategories	Examples
Lack of knowledge about periodontal diseases	Aesthetics, tooth loss and implants, comprehensive treatment need, amazement, bleeding, poor hygiene, gingival inflammation, tooth mobility	"I honestly didn't have a clue what periodontitis was. The postgraduate dental student I was assigned to explained to me the problem I had and that I could lose all my teeth if I didn't have treatment." <i>51-year-old man</i>
Perioperative experience	Nervousness, tolerable pain, resignation, fear and discomfort towards dental instruments, better than expected, exhausting and invasive, gradual improvement, comprehensive and fulfilling care, cannot remember	"At the beginning I was angry at myself. I wondered how could have things got to this, because of the state of my mouth. I was also quite surprised how invasive treatment was... How's it possible for man to reach the moon and yet no other solution is available to clean one's teeth! [laughing]" <i>51-year-old man</i>
Treatment implications	Pain, discomfort, sensitivity, feel nothing concerning periodontics	"My gums felt frail at first. My teeth were sensitive for quite a long time... I was told to use a special toothpaste and now I brush my teeth and have no further problems." <i>58-year-old woman</i>
Clinician – patient relationship	Relief, trust, support, empathy, closeness	"The postgraduate students who treated me were so kind and lovely with me. They were welcoming and took their time to answer all my questions, explaining to me, step by step, everything I was supposed to do. They were also under the supervision of their clinical tutor all along." <i>62-year-old woman</i>

Emerging themes were organized in order of appearance from participants' reports while subcategories correspond to coding of the most repeated concepts reported by participants in the study.