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The Experiences of Patients with Periodontitis and its Treatment: A Qualitative Study

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Objective: Gain insights into how patients with periodontitis perceive the disease and its treatment, thus identifying their potential needs. ***Methods:*** Descriptive qualitative research among 19 patients with periodontitis purposefully sampled for semi-structured interviews. Thematic analysis of the interview data used NVivo 11.0. ***Results:*** The data could be summarized in five themes: 1) restricted physiological function of the oral cavity; 2) psychological frustration; 3) impact on social life; 4) focus on patient comfort; 5) accessibility, convenience, and science of oral health services. ***Conclusions:*** Periodontitis can affect biopsychosocial aspects of patients lives. Some needs remain to be met or improved during treatment. As the paradigm shifts, dental practitioners should also focus on their professional roles and take measures to improve patients' experiences.

Keywords: *Periodontitis, Treatment, Patient-reported outcomes, Needs, Psychological experiences*

Introduction

Clinical practitioners have begun to pay attention to patient-reported outcomes with the development of the biopsychosocial model (DiLiberto *et al.*, 2020; Pavlovic *et al.*, 2022). In clinical settings, practitioners should assess patient's subjective experiences of oral conditions as well as objective indicators (Tong and Sun, 2021). Periodontitis is a chronic disease that needs multi-stage treatment and long-term maintenance. Full patient participation in treatment and effective self-management are critical. However, greater patient participation will depend on their subjective feelings and hopes (Zhao *et al.*, 2019).

To address this issue, quantitative studies have investigated the impact of periodontitis and treatment on patients (Wong *et al.*, 2021c). Only a few studies have qualitatively explored their experiences with the disease and its treatment. Mainly, these studies have focused on patients' illness perceptions and the impact of the disease on quality of life in their cultural context (Hijryana *et al.*, 2021; Pyo *et al.*, 2020; Wong *et al.*, 2021b).

Considering the variances among cultural contexts and dental treatment systems, it is necessary to conduct research in different settings. To date, there have been no reports published on the experiences and feelings of patients with periodontitis in China. This study aimed to provide insights into how patients perceive periodontitis or its treatment and their potential needs.

Methods

A descriptive qualitative approach was selected to investigate patients' feelings and experiences (Tong *et al.*, 2007). Ethical approval was obtained from the Ethics Committee of the University affiliated Hospital (NJSH-2021NL-112). Before the interview, all participants signed an informed consent form in Chinese.

Inclusion criteria were that patients were: diagnosed with periodontitis (regardless of classification and severity); aged 18 years and older and had started periodontal treatment. Exclusion criteria were being unable to read or write, or having difficulty in communication and comprehension; finding difficulty in oral self-maintenance or having mental illness.

Purposive sampling with a maximum variation technique was used to select participants to capture recruit individuals from different backgrounds (Coyne, 1997). Recruitment continued until the data were saturated, identified with no new themes emerging from three consecutive interviews (Vasileiou *et al.*, 2018). Participants were recruited from December 2021 to March 2022 in a hospital periodontology clinic.

Face-to-face semi-structured interviews first discussed the study objectives, then considered: How participants discovered their current oral problems; What they thought when they learned about their condition; whether the problem had caused them problems, including impacts on daily life, physical discomfort, psychological changes, etc.; How they feel during dental visits and What help they would like from their health care providers.

The interviews were conducted after periodontal treatment, in a quiet outpatient interview room and lasted between 20-40 minutes. A second researcher recorded the interviews, including nonverbal information. Pilot interviews were conducted to improve the quality of the formal interviews. Team-based reflection took place after each interview.

Data analysis was conducted alternately with data collection. Within 24 hours of each interview the recordings and written notes were transcribed into text and imported into NVivo 11.0 software.

After checking, two researchers analysed the data thematically (Braun and Clarke, 2006), first familiarising

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themselves with the transcribed material and recording initial ideas. Next, one researcher line by line coded the content of interest, which the second researcher checked and discussed inconsistencies. After discussion, both researchers summarized the coding and checked whether the theme matched with the code and relevant citations. Details of the theme were then refined, including its name and definition. Finally, typical citations were selected to report the results.

Considering the complex multidimensional nature of the experiences, analysis was based on Engel's (1977) biopsychosocial theoretical framework, which described the impact of health or illness on the patient from three interacting dimensions. However, to capture rich themes, coding was not limited to the framework.

Several quality control measures were adopted to ensure data quality. All the research team was qualified for qualitative research. We refined the interview schedule and method in pilot interviews. During the interviews, participants were encouraged to express themselves fully and we explored new leads as much as possible to ensure the saturation. After the interview, we analyzed the data promptly, but held reflective discussions for potential bias. The study is reported according to O'Brien et al.'s (2014) standards for qualitative research.

Results

We recruited twenty patients with periodontitis, of whom one withdrew during the interview. The nineteen participants included fourteen males and five females, of whom eleven were aged 18-35y, three were 36-45y, four were 46-65y and one was older than 65 years. One person had been educated to junior high school level or below, one to high school level and seventeen had attended college. Two participants had diabetes but the other seventeen had no related chronic diseases. Five patients had mild chronic periodontitis, nine moderate and four had severe disease. One had extensive aggressive periodontitis.

Data were summarized in five themes with 13 subthemes (Figure 1).

3.1 Restricted physiological function of the oral cavity

3.1.1 Bleeding

Some patients in their early stages had not yet experienced severe manifestations. They usually thought there was something wrong with their teeth if they experienced bleeding on brushing and went to the dentist where they were diagnosed with periodontitis.

"I always feel bleeding while brushing my teeth must be more or less abnormal, so I thought I should spare some time to come to the hospital and do an examination ..." (Pt9, male, 36-45y)

3.1.2 Discomfort in chewing

Patients reported that their dental function had changed to some extent. Many felt physical or psychological discomfort while chewing. Some reported they felt weakness in chewing, pain and food trapping in between their teeth and had to change their eating habits. Some became afraid to eat foods that could become trapped between their teeth.

"While eating, I will consider whether the food will easily clog my teeth. If I think about eating that food, I'll have to clean it again. You know, it is really troublesome, so I do not want to eat that one, and choose the one that will not clog my teeth." (Pt19, male, 18-35y)

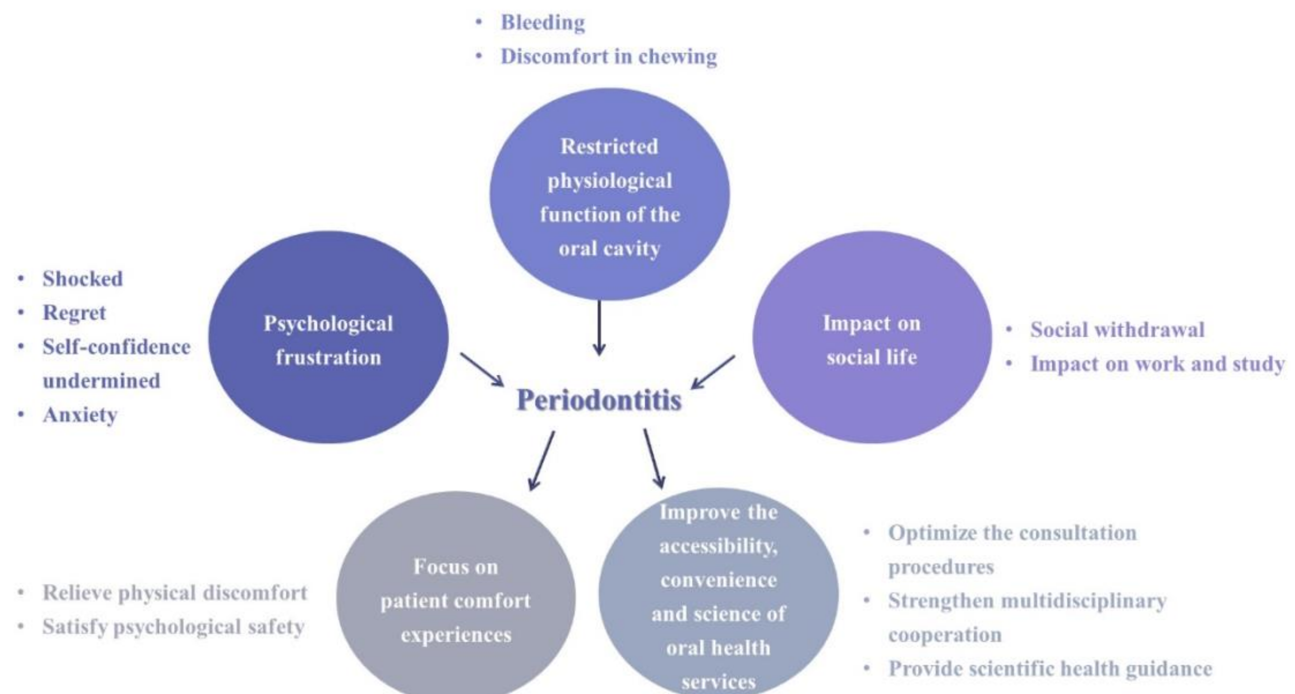

***Figure 1**. Themes in nineteen patients' experiences of periodontitis.*

3.2 Psychological frustration

3.2.1 Shock

Some patients were aware that periodontitis was often caused by poor oral hygiene. Therefore, when they were diagnosed, they tended to compare their oral hygiene behaviors with those around them and felt very shocked.

"To be honest, I was pretty devastated by the fact (diagnosed with periodontitis), because I am always very careful with my oral hygiene." (Pt2, male, 46-65y)

3.2.2 Regret

When they learned more about the disease, patients reflected on their past behaviors contributing to their current oral status. Often, they regretted not paying attention to their oral health earlier and missing the best time for treatment.

"In fact, the best is to go to the hospital when a little (problem) at the beginning. However, most people didn't have that strong will or awareness to take it seriously. Later, it became more serious. The more serious it is, the more you may pay attention to it and it is a vicious circle. I really regret it." (Pt19, male, 18-35y)

3.2.3 Self-confidence undermined

Where aesthetics were undermined some participants expressed low confidence in communicating with others.

"I admire people with a full mouth of fine teeth, and mostly, I feel unconfident." (Pt9, male, 36-45y)

3.2.4 Anxiety

Some patients were aware that being diagnosed might mean a series of problems, including gum recession, larger gaps between the teeth, the loss of loose teeth, etc. They perceived that all these problems could affect social interactions. Moreover, some people thought the disease was related to aging, so when they first got their diagnosis, they felt anxious.

"I'm about to reach 70. In the past, I have noticed a characteristic of this age – When they talk to others, there is often something stuffed between their teeth. They may not have the awareness. I will soon face this interpersonal communication problem. It is really impolite to others." (Pt2, male, 46-65y)

"I think this is the kind of disease only the old one has. In that case, I'm aging now because I've got the diagnosis." (Pt12, male, 36-45y)

3.3 Impact on social life

3.3.1 Social withdrawal

Perceiving the abnormal oral odor and poor aesthetic function, some patients felt uncomfortable communicating with others. Their psychological burden increased and their willingness to socialise reduced.

"When approaching people and talking to them, it can make a good impression if we have good teeth. Since my teeth are not very good, I am not that willing to interact or feel less confident." (Pt9, male, 36-45y)

3.3.2 Impact on work and study

Having experienced symptoms, time, and financial costs caused by periodontitis, some patients felt that their work and studies had been affected. Some changed careers because their ideal careers did not allow for this oral problem. One participant described how his life went from one point to another with gestures. Because of the terrible feeling of tooth pain, people couldn't concentrate well at work or study.

"Teeth are so important. They can affect your whole life. It hurt me." (Pt7, male, 46-65y)

3.4 Focus on patient comfort

3.4.1 Relieve physical discomfort

Participants described negative experiences, including pain, stress, and other discomfort during treatment. However, they outlined things dentists can do to alleviate the discomfort. For example, psychological preparation in advance and taking relieving measures during treatment, etc.

"Scaling is a bit painful. The days feel like years. I was counting the seconds there. A little music might make me feel more relaxed." (Pt9, male, 36-45y)

3.4.2 Reducing anxiety

Dentists' professional knowledge and good communication skills could make patients feel more secure and comfortable. Patients wanted to be treated with respect during treatment.

"You must know how to empathize with the patient's experiences. Dentists must interact with patients. It is useless for one to have high medical skills but low interactions with our patients." (Pt2, male, 46-65y)

3.5 The accessibility, convenience and science of oral health care

3.5.1 Optimize the consultation procedures

Some patients understood the importance of regular oral visits. However, they often postponed timely visits for various reasons. On the one hand, they lacked oral-related information. The different specialties of dentistry confused them, and they did not know which department to choose. Others were frightened and gave up with the long-term and complex periodontal treatment.

"Every time you make an appointment, you can't immediately resolve the problem. Then you may wait for the next opportunity. When you got time for an appointment, the step may repeat. At last, you may just want to give up." (Pt18, male, 18-35y)

3.5.2 Strengthen multidisciplinary cooperation

Participants suggested that multidisciplinary working as early as possible could benefit more patients. Some patients with mild periodontitis had been unwilling to seek care because they didn't experience severe pain but had been referred for a specialist opinion after examination by another dentist. Those referrals had facilitated early treatment allowing patients to benefit from that cooperation.

3.5.3 Provide scientific health guidance

Use of the internet allowed some patients to access to health information, but it could be difficult to identify scientifically valid, valuable, and appropriate information.

Patients wanted to receive more professional, personalized, and scientific health guidance at every visit. The guidance content could contain personalized health measures for cleaning, live demonstration of maintenance skills, etc. They felt delivery of health guidance should be more diverse, combining online and offline. Some patients even suggested carrying out community-level health education.

"We are still doubtful about the knowledge online. Therefore, some positive communication response, in reality, will make us more assured." "The technique you see in the video is different from the actual operation, and you don't know how well you use it." (Pt19, male, 18-35y)

"Put some videos of the treatment for damaged teeth in the community. I think whoever watches it will be afraid, and after watching it, they just want to protect their teeth." (Pt4, male, 18-35y)

Discussion

This study aimed to understand how patients perceive periodontitis, its treatment and their potential needs. Themes in the data could be related to biopsychosocial framework. This framework has been used to interpret disease mechanisms and design interventions (Hong *et al.*, 2022; Wong *et al.*, 2021a). However, it can also be used to explain patients' experiences from the interacting physical, psychological and social aspects of oral conditions (Chiu *et al.*, 2019).

Participants experienced several negative physical impacts of periodontitis. Discomfort, inability to chew and food stuck between the teeth were defined as functional limitations by Hijryana et al. (2021). Changes in periodontal structure can restrict masticatory efficiency and function (Barbe *et al*., 2020). Patients often had to change their diet and even developed nutritional problems (O'Keeffe *et al*., 2019). Dental pain before treatment, also reported by Pyo et al. (2020), can impair quality of life. In response to these negative feelings, dental practitioners could empathise with their patients' distress and support them when they seek help. Moreover, clinicians should encourage towards subsequent periodontal treatment to relieve their symptoms and achieve relative periodontal health.

Psychosocial impacts have been reported elsewhere, including patients feeling shocked by their diagnosis (Karlsson *et al.*, 2009) and regretting not taking early protective measures (O'Dowd *et al.*, 2010).

Uniquely, undermined self-confidence has not been reported in other studies. A study in New Zealand found that some felt shame due to the perceived cause of the disease (Horne *et al.*, 2020). Rawlinson et al. (2020) identified psychological predictors of periodontal health and related quality of life. Therefore, interventions for these psychological factors may be adjuncts to periodontal treatment. That is, in order to help patients better adapt to periodontitis and its treatment, clinicians could adopt multidimensional approaches to the disease and its psychosocial precursors and consequences.

Our patients felt that a comfortable experience at their first consultation was helpful in improving their subsequent adherence to treatment. Anxiety can increase the experience of pain during treatment (Lin *et al.*, 2017). Therefore, the level of pain during treatment may be partly predicted by assessing anxiety before treatment, allowing scope for approaches to relieve anxiety and pain during dental treatment, including music therapy, as mentioned by participants in this study, aromatherapy, and virtual reality technology (Bertacco *et al.*, 2022; Cai *et al.*, 2021; López-Valverde *et al.*, 2020).

Apart from reducing pain during treatment, it is also necessary to meet patients' psychological needs by providing information clearly and appropriately (Karlsson *et al.*, 2009). Our patients indicated such information needs. Therefore, to increase patients' control over their disease, dental professionals could give timely, valid, and personalized health advice whenever possible.

Dental professionals should be mindful of the need for good communication during consultations. As in a previous qualitative study (Horne *et al*., 2020), patients appreciated dental professionals using appropriate communication skills and adopting an empathetic, non-judgmental attitude. Patients' health behaviors can improve in response to professionals using cognitive- or relationship-oriented communication strategies (Lie *et al*., 2021). Professionals could improve their communication skills as part of the quality of treatment to may help meet patients' psychological needs.

Online artificial intelligence systems could be used to enhance the efficiency of oral health services by using them to triage patients in relation to symptoms, personal details and medical conditions. As well as recording diagnoses and treatment details such systems could be used to communicate with patients to increase their adherence to self-care regimens.

Like all research, this work has strengths and limitations. As our participants were recruited from tertiary hospitals, it is unclear whether the results can be generalized to other settings. Importantly, we collected and analysed the data from our professional perspectives as postgraduate students and clinicians in periodontology, orthodontics, and medical management and may have limited participants to express themselves freely during the interviews and while interpreting the results. However, this bias may have been minimized by data analysis from the contrasting perspectives of our team. Data analysis used the bio-psycho-social model to structure our understanding of the experiences. Nevertheless, to guide clinical practice more objectively, the coding was not limited to this theory and extended to the patient's unmet needs. The research was guided by the reporting standards for qualitative studies (O'Brien *et al.*, 2014) to control the quality of the data collection and analysis. Never-the-less, our inter-coder agreement may be affected by inducting the codes from the data rather than devising an *a priori* coding system. However, coding was confirmed during the analysis.

Future research could incorporate these findings into quantitative approaches or conduct longitudinal qualitative research to understand patients' physical and psychosocial experience in greater depth. Moreover, qualitative investigations of professionals may also have policy implications.

In conclusion, this study provided insights into the physical, psychological, and social impact of periodontitis and its treatment on patients and identified unmet needs. The findings have implications for clinical practice. Dental professionals should not only focus on improving objective indicators but also consider patients' experiences to develop a person-centered clinic practice.

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