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ORIGINAL ARTICLE

Patients receiving comprehensive periodontal treatment have better clinical outcomes than patients receiving conventional periodontal treatment



Chien-Lung Chan ^a, Huey-Jen You ^{b,c,*}, Hsin-Jay Lian ^{d,e},
Chi Hsiang Huang ^f

^a Department of Information Management, College of Informatics and Innovation Center for Big Data and Digital Convergence, Yuan Ze University, Taoyuan, Taiwan

^b Graduate Institute of Department of Information Management, College of Informatics, Yuan Ze University, Taoyuan, Taiwan

^c Department of Medical Expresses Section 2, Northern Division, National Health Insurance Administration, Ministry of Health and Welfare, Taoyuan, Taiwan

^d Graduate Institute of Clinical Endodontics, National Taiwan University, Taipei, Taiwan

^e Taiwan Dental Association, Taipei, Taiwan

^f Graduate Institute of Clinical Dentistry, Taipei Medical University, Taipei, Taiwan

Received 30 September 2015; received in revised form 30 October 2015; accepted 30 October 2015

KEYWORDS

check-up compliance;
clinical outcome;
comprehensive
periodontal
treatment project;
oral hygiene
instruction;
periodontal disease;
plaque control

Background/Purpose: In Taiwan, more than 90% of people aged 35–44 years have periodontal disease. To reduce periodontal disease in Taiwanese people, the National Health Insurance (NHI) system included the comprehensive periodontal treatment project (CPTP) in 2010. The CPTP mainly emphasizes oral hygiene instruction, plaque control, and check-up compliance, with the goal of providing complete, continual, and high-quality periodontal care to patients. The purpose of this study was to assess whether the patients receiving comprehensive periodontal treatment had better clinical outcomes than those receiving conventional periodontal treatment.

Methods: Secondary data exploration was conducted in this study. Based on NHI data, patients who had participated in the CPTP and completed the three-stage periodontal treatments between 2011 and 2012 were recruited in the experimental group (65,342 patients). The patients who had not participated in the CPTP but had received conventional periodontal treatment during the same period were selected in the control group (106,740 patients). Using the four

Conflicts of interest: The authors have no conflicts of interest relevant to this article.

* Corresponding author. Medical Expresses Section 2, Northern Division, National Health Insurance Administration, Ministry of Health and Welfare, 3F, Number 525, Section 3, Zhongshan East Road., Zhongli City, Taoyuan County 32005, Taiwan.

E-mail address: s966366@gmail.com (H.-J. You).

<http://dx.doi.org/10.1016/j.jfma.2015.10.017>

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parameters (re-treatment, endodontic therapy, surgical restoration, and tooth extraction) as prognostic indicators, we performed logistic regression analyses to evaluate whether patients in the experimental group had better clinical outcomes than those in the control group.

Results: We found that patients participating in the CPTP for 545 days had substantially lower rates of re-treatment, endodontic therapy, surgical restoration, and tooth extraction than those in the control group ($p < 0.001$).

Conclusion: We conclude that the patients receiving comprehensive periodontal treatment have better clinical outcomes than the patients receiving conventional periodontal treatment.

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Introduction

Periodontal disease is a common chronic infectious disease affecting the oral cavity. According to the American Academy of Periodontology, periodontal diseases (including gingivitis and periodontitis) refer to the bacterial infection of periodontal tissues (such as gingiva, periodontal ligament, cementum, and alveolar bone). The main etiology of the periodontal disease is dental plaque. If the dental plaque is not effectively removed, it may cause gingivitis, chronic periodontitis, and tooth loss, which in turn results in reduced digestive functions and poor physical health.^{1,2} In 2003, the World Health Organization (WHO) reported that approximately 5–15% of people aged 35–44 years experience severe periodontitis.³ In 2013, 88–98% of people aged 35–44 years in Europe, Asia, and North and South America are found to have periodontal diseases (87.5% in France, 100% in Hong Kong, and > 90% in Taiwan).^{4–7} Approximately 30% of people with periodontal diseases experience periodontitis. The high incidence rate of periodontal disease in people of different countries including Taiwan indicates that we need to develop a useful periodontal disease treatment project to reduce periodontal disease and enhance the quality of periodontal treatment.

Factors that influence periodontal treatment prognosis include the number of periodontal pathogens and oral hygiene. There are three types of periodontal treatment: (1) initial treatment, including oral hygiene instruction (OHI), plaque control, dental calculus scaling, and root planing; (2) combination treatment, including chemical drug treatment, surgical treatment, gingivectomy, and alveolar bone repair; and (3) other treatment methods, which include functional occlusion therapy, selective tooth extraction, supportive periodontal therapy, smoking cessation, and diabetes control.^{8–10} Previous studies have shown that initial treatment is required to control periodontal disease and restore periodontal health.^{11–13}

In Taiwan, the mandatory National Health Insurance (NHI) program reimburses dentists for conventional periodontal treatment according to a fee-for-service approach, with reimbursements calculated on the basis of treatments. In other words, after dentists make the diagnosis of dental diseases in patients and provide related services, they can apply for payment according to the services provided.

These related services include periodontal emergency treatment, dental calculus scaling, subgingival curettage and root planing, periodontal flap surgery, gingivectomy, basic periodontal treatment, and dental plaque removal. [Appendix 1](#) provides details for comprehensive and conventional periodontal treatments and their payment codes under the NHI program.

To provide proper periodontal services (treatment and care), the NHI Administration began to promote the comprehensive periodontal treatment project (CPTP) in 2010.¹⁴ The CPTP focuses on quality of care and has three main priorities: OHI, dental plaque control, and check-up compliance. Numerous studies have indicated that proper oral hygiene can effectively reduce dental plaque and prevent the aggravation and relapse of periodontal disease. In addition, check-up compliance is conducive to plaque control and self-monitored oral health.^{2,15,16} The CPTP integrates these three priorities, emphasizing the importance of the continuity and integration of dental care. Previous studies have shown that the CPTP yields favorable treatment outcomes and care quality.

The CPTP includes several stages, focusing on the provision of adequate treatment and care, and implementation of dental assessment and oral health education at each stage to ensure comprehensive periodontal treatment. The first stage (P4001C) comprises the provision of pretreatment X-ray, periodontal examination, OHI, and a CPTP handbook. At the second stage (P4002C), subgingival curettage (or root planing) and plaque removal are undertaken, in conjunction with advanced plaque removal instruction and plaque control records. The third stage (P4003C) entails posttreatment periodontal charting, plaque control record, and assessment of probing pocket depth ([Figure 1](#)). The NHI provides coverage for tooth extractions when patients satisfy the following criteria: no contraindications of such treatment and at least 70% of teeth showing a pocket depth reduction of 2 mm from the original pocket depth ≥ 5 mm at one or more locations after at least 4 weeks (28 days) following the second-stage treatment. In addition, pre- and posttreatment periodontal charting and advanced plaque control record must be provided for expert review.¹⁴ [Appendix 1](#) contains the payment items and related content of the CPTP. The Taiwan Dental Association assists in formulating regulations for dental education, administration, technologies, and

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