



Research Article

The Success of Final Restoration in Indirect Pulp Capping on Oral Health-Related Quality of Life

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Abstract

Quality of life can be affected by oral health. Final restoration in indirect pulp capping treatment can be a clinical assessment to determine the success of vital pulp treatment. Therefore, we intended to examine whether the success of the final restoration of the indirect pulp capping affected the oral health-related quality of life (OHRQoL). The study aims to determine the effect of the final restoration type in indirect pulp capping treatment on oral health and quality of life at the Dental Hospital of Universitas Muhammadiyah Yogyakarta (UMY). This study is analytically observational with a cross-sectional design, univariate analysis for frequency distribution, simple linear regression analysis, and bivariate analysis in the form of Spearman correlation to identify the relationship between the success of the final restoration type of the indirect pulp capping with OHRQoL. The respondents comprised 11 males (47.8%) and 12 females (52.2%). The capping material used was Ca(OH)₂, Dycal (60.9%), Glass ionomer cements (GIC) (39.1%) and the final restoration type consisting of composite resin (73%) and onlay or inlay (26.1%). There was no significant effect of the final restoration type on OHRQoL, with a significant value of the Spearman analysis of 0.221 ($p < 0.05$), a correlation coefficient value of 0.265 and the significant value of the simple linear regression analysis of 0.221 ($p < 0.05$). Conclusion: The success of the final restoration type in indirect pulp capping treatment did not affect the oral health-related quality of life.

Keywords: final restoration success; indirect pulp capping; oral health-related quality of life

INTRODUCTION

Quality of life is a complex and multidimensional aspect subjectively assessed on physical and mental aspects influenced by the environment and economic aspects.¹ Health is one of the aspects that can be used to determine the quality of life. Oral health affects speaking, eating, and socializing.^{2,3}

Oral health has an important role in determining the quality of health life. Inflammation of the dental nerve is one of the most common oral problems for which individuals seek dental care.⁴ Pulpitis is an inflammation in the dental nerve

characterized by the sudden onset of pain due to cold or heat stimulation.⁵ Pulp capping is included in treating vital pulp by administering medication to the nerve to induce pulp regeneration.⁶ Indirect pulp capping is carried out by gradually cleaning carious tissue using an excavator in the dentin layer to prevent perforation and administering medication such as calcium hydroxide, which converts active caries into arrested lesions.⁷

Pulp capping can be performed on teeth with a thin layer of dentin. The success of treatment is not only focused on the technical treatment but also must be

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beneficial for patients to receive a better quality of life for oral health.^{2,7} Materials commonly used in pulp cap treatment are calcium hydroxide (CaOH)₂, Mineral Trioxide Aggregate (MTA), Resin Modified Glass Ionomer Cement (RMGIC) and biodetin.⁷

The success of the final restoration can be determined by examining the following aspects:

a. The subjective examination is carried out to extract subjective information from the patient regarding what the patient feels.⁸ The examination consists of major complaint, which is the main reason the patient needs treatment, medical history, which is an evaluation of the patient's general health, and dental history, which is information about the patient's oral health history.^{8,9}

b. Objective examination includes intraoral by observing the oral cavity such as gingiva, mucosa, palpation, percussion, tooth mobility, pulp vitality test, and periodontal tissue examination.^{8,9}

c. Supporting examination can be carried out by radiographic examination to determine the condition of the periapical region of the teeth.¹⁰ Radiographic examination can be used to determine the diagnosis and treatment, such as distinguishing between the canal and periodontal ligament, determining the working length, and evaluating treatment results.¹¹

Oral health quality of life is known as Oral Health-related Quality of Life (OHRQoL). This term has several dimensions, including oral health, function, environment, emotion, and satisfaction with care.^{3,12} The concept provides an overview of aspects used to determine the quality of life in oral health. Oral Health Impact Profile (OHIP) is a measuring tool to measure the quality of life related to oral health.² OHIP is a questionnaire containing 14 questions from 7 domains to facilitate the assessment of improving oral health and quality of life.¹³ Measurement of quality of life in oral health will provide an overview

of treatment success for patients.³ This measuring instrument can determine the relationship between dental and oral health care with improving the quality of healthy life.

Based on the description above, the researcher is interested in conducting research on the effect of restoration success on oral health quality of life using the Oral Health Impact Profile (OHIP) as a tool to measure oral health-related quality of life. This study aims to determine the effect of the final restoration's success in treating indirect pulp capping on the patient's quality of life at UMY Dental Hospital.

MATERIALS AND METHODS

This study is analytical observational research with a cross-sectional design. The subjects of this study were patients who had indirect pulp cap treatment at the UMY Dental Hospital in 2018, 2019 and 2020. All subjects were selected according to inclusion criteria, including aged 19-40 years who had completed indirect pulp capping treatment and were willing to fill out informed consent. The exclusion criteria included respondents who changed telephone numbers, did not complete or could not fill out the google form, and had not completed pulp cap treatment.

Assessment of oral health-related quality of life (OHRQoL) employed the Oral Health Impact Profile (OHIP-14) questionnaire, which consisted of 14 questions from seven dimensions, namely functional limitations, pain, psychological discomfort, physical limitations, psychological limitations, social limitations, and disability. The success of final restoration in indirect pulp cap treatment was assessed using periapical radiographs (radiographic image showing) with evaluation criteria score 0 that indicated restoration failure characterized by poor marginal adaptation or poor contour and loss of proximal or occlusal contact. Score 1 indicated a good restoration condition (hermetic, good

contour, and good proximal or occlusal contact).²

Data were analyzed using univariate or descriptive analyses for the frequency distribution of gender, age, tooth element, capping material, and restoration type. Bivariate analysis in the form of Spearman correlation was employed to determine a relationship between the success of the final restoration of the indirect pulp cap and OHRQoL. Simple linear regression analysis was used to identify if there was an effect on OHRQoL.

RESULT

Respondents of this study were 85 patients with indirect pulp cap until the final restoration at the UMY Dental Hospital. Among all respondents, the success of the final restoration of indirect pulp cap treatment on 55 respondents was evaluated. 33 respondents with an active WhatsApp number were included in the inclusion criteria after data collection was carried out by contacting the respondent. Data collection has been completed by conducting several follow-ups with respondents. Out of 33 respondents, 10

were excluded as they did not fill out the informed consent and questionnaire, as seen in Chart 1.

A total of 23 respondents met the inclusion criteria consisting of 11 men (47.8%) and 12 women (52.2%). The average age of respondents was 26.1 years. The teeth that were used to assess the success of the final restoration of the indirect pulp cap were anterior and posterior teeth, which were dominated by maxillary posterior teeth. The cap materials used were Ca(OH)₂ Dycal and GIC, with more teeth using Ca(OH)₂ Dycal (60.9%) than GIC (39.1%). The final restoration type consisted of composite resin and onlay or inlay, presenting 73.9% composite resin and 26.1% onlay or inlay.

The results of the Spearman analysis revealed that the data had a significance of 0.221 ($p < 0.05$), indicating no relationship between the variables of influence. The influence of the correlation coefficient of 0.265 indicated a weak relationship between the two variables. The result can be seen in Table 1.

Chart 1. Research Respondents

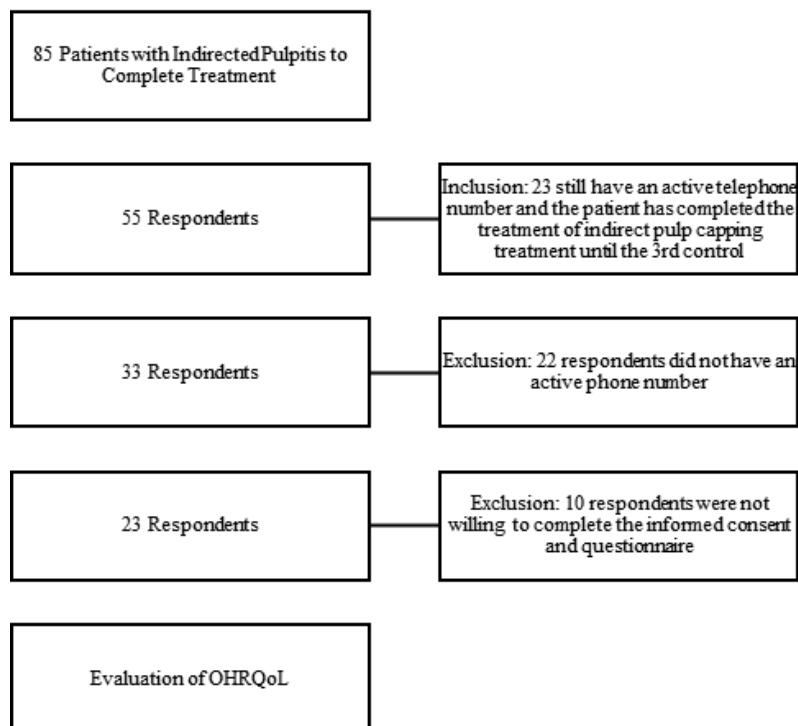


Table 1. Spearman Analysis

	Sig.	Correlation
The Success of Final Restoration OHRQoL	.221	-.265
	.221	-.265

Table 1 shows a significance value of 0.221 ($p < 0.05$), indicating the hypothesis is rejected. Furthermore, there was no significant effect of the success of the final restoration in indirect pulp cap treatment on oral health-related quality of life (Table 2).

Table 2. Linear Regression Analysis

ANOVA	Sig.
Regression	.221 ^b

DISCUSSION

Among the 23 respondents, 19 received a low OHIP score and only 4 received a high OHIP score. Based on the OHRQoL assessment of the 23 respondents, 21 had good oral health and quality of life, and there were only 2 respondents who were in the moderate category. It indicated that although many respondents (19 out of 23 patients) had a poor final restoration success assessment, most had good oral health quality. Despite the poor evaluation results, there was no negative effect on OHRQoL, as most of the respondents' questionnaire answers scored 0. It indicated that the respondents had never or did not experience difficulties related to oral health quality of life, and the clinical examination was in good condition.¹⁸

This study is in line with the previous study, which reported that people with bruxism have no impact on OHRQoL. It happens because bruxism is caused by anxiety as the main factor.¹⁴ Another study reported that respondents with malocclusion and dental pain can cause poor OHRQoL.¹⁵ Malocclusion has a negative impact on OHRQoL as it is related to appearance when a person is in social interaction. It is related to facial appearance and smile, affecting an emotional and social appearance.¹⁶

Previous studies have suggested that restorative treatment for dental caries improves oral health by reducing discomfort and pain.¹⁷ Restorative factors and biological variables associated with endodontic treatment provide an overview of treatment outcomes and the restoration quality that are important for long-term dental prognosis.⁶ The success of the treatment can be determined by clinical measures to identify the effectiveness of treatment, and determining success can be through medical history, clinical examination, and radiographs.^{19,20}

Radiographic evaluation of pulp capping did not negatively affect OHRQoL because 19 respondents received a bad score, while the remaining 4 respondents with good scores had good clinical examination results. Radiographic evaluation results can be used as a long-term prognosis, although the evaluation results are poor. In short, restorations affect oral health and quality of life by relieving pain and affecting the prognosis of endodontic treatment.

The absence of the effect is due to various factors, such as individuals carrying out other treatments, including oral rehabilitative.⁴ This study also found that most respondents had performed dental treatment, including restorative measures, scaling, and tooth extraction. The quality of life of oral health is a subjective measure, so it does not always affect clinical oral health status.⁴

Previous research states that there are significant results from the effect of oral health on oral health quality.³ Another study reported that endodontic treatment performed by endodontists on quality of life significantly improved in terms of a decrease in tooth sensitivity to temperature and uninterrupted physical activity.¹⁸ Other studies mentioned that dental care is very important as it can improve OHRQoL by reducing pain and bad breath.¹⁵

The explanations above confirm that there is no effect of the success of the final restoration in indirect pulp cap

treatment on oral health quality of life. Oral health quality of life can be influenced by other factors, such as previous dental care that has been carried out. The measurement of oral health quality of life is subjective, so differences can occur.²⁰

This study only focuses on the success of the final restoration of indirect pulp cap treatment without considering the patient's previous dental treatment history, so no relationship was found with oral health quality of life. The samples in this study are too small, and only a few references discuss the success of the final restoration on the indirect pulp cap with quality of life. Therefore, the hypothesis of the results of this study is rejected as there is no relationship between the success of final restoration in the treatment of indirect pulp capping with oral health and quality of life.

CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that there was no relationship between the success of the final restoration in indirect pulp capping treatment and the oral health-related quality of life.

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