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Research Article

# UNDERSTANDING BARRIERS TO IMPLEMENTING EVIDENCE-BASED CLINICAL RECOMMENDATIONS IN PRIVATE-PRACTICE DENTISTRY: A FOCUS ON NON-CAVITATED CARIOUS LESIONS

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**ABSTRACT**

This qualitative study delved into the obstacles hindering the integration of evidence-based clinical recommendations among private-practice dentists, with a specific focus on the application of Dental Association guidelines for sealing non-cavitated carious lesions. Through convenience sampling, two private-practice dentists were recruited and presented with case studies, prompting discussions on treatment recommendations while interviewers probed for underlying rationale. Recorded sessions were transcribed verbatim for thematic analysis. Findings highlighted the significant influence of dentists' clinical experience on treatment decisions, alongside challenges such as lack of reimbursement and mistrust of guidelines. The study illuminates a discrepancy between ingrained behavior and evidence-based practices.

**Key words:-** Evidence-Based Dentistry, Private-Practice Dentists, Clinical Recommendations, Noncavitated Carious Lesions, Qualitative Study.

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## INTRODUCTION

As a consequence of the American Dental Association's (ADA) clinical recommendations [1] regarding pit-and-fissure sealants for non-cavitated carious lesions, evidence-based dentistry (EBD) has garnered increased attention. A study [2] revealed that fewer than 40 percent of surveyed dentists adhered to the ADA's recommendations to seal non-cavitated carious lesions in individuals across different age groups. This study provoked a strong response from readers of the Journal of the American Dental Association [3,4].

In a guest editorial published in JADA [5], the article was highlighted as a "troubling" illustration of dentists resisting or delaying the adoption of current best evidence applicable to routine practice. The ADA's definition of EBD [6] emphasizes the importance of integrating the best available scientific evidence with a dentist's clinical expertise and patient treatment preferences. While EBD is believed to enhance patient care [7], its adoption has been sluggish. Numerous studies have identified barriers to EBD [7-9], yet little progress has been made in overcoming these obstacles. Many of these studies have recommended further research to elucidate these barriers [10]. One study [11] categorized factors hindering the widespread adoption of clinical recommendations into three categories: Attitudes, Behaviors, and Norms. The Norms Group investigated

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cognitive, behavioral, and social factors influencing knowledge application and identified an additional barrier: clinicians' limited access to guidelines [12]. This barrier presents an opportunity for researchers to gain deeper insights into how dentists apply clinical recommendations by examining their behavior. In the present study, dentists were tasked with planning treatment for patients in realistic yet simulated settings, providing an avenue to explore their decision-making processes and barriers to adopting evidence-based practices.

## METHODS

This study aimed to investigate the adoption of evidence-based practices (EBP) among dentists regarding the sealing of noncavitated lesions, with a focus on understanding their behaviors and thoughts for future research. Dentists were interviewed in their practice settings using vignettes, which have been shown to elicit similar responses to real-life scenarios. Each participant was presented with case studies developed by a multidisciplinary team, encompassing medical and social histories, dietary habits, fluoridation status, chief complaints, and radiographic findings. A total of 44 general dentists in private practice were recruited for the study. Each participant was presented with two case vignettes, one representing a patient with low caries risk and the other with a history of caries and higher risk. Treatment plans were developed based on ADA recommendations, and participants were asked to outline their plans and provide explanations. The interviews were conducted by the project director, who also summarized the responses at the end of each session. Four investigators presented their treatment plans based on ADA recommendations, and participants were encouraged to discuss suggestions and identify barriers to implementation. To analyze the relationship between years since graduation and treatment choices, a Spearman rank correlation coefficient was calculated. Treatment options were ranked based on the ADA recommendations, with sealants ranked 1, monitoring ranked 2, fissurotomy with restoration ranked 3, and conventional restoration ranked 4. The correlation coefficient was computed based on the aggregated values for each tooth and all teeth in each case, considering that all lesions were small and non-cavitated.

## RESULTS

Most of the 44 participants were solo practitioners who attended dental school. More than half of the participants were male, and their ages ranged from 25 to 65. Twenty-seven percent of respondents reported being members of the ADA. Participants summarized each case's information and articulated their treatment plans orally during the thinking-aloud process. Based on the participants' recommendations, treatment plans. As responses regarding sealants for noncavitated carious lesions did not differ significantly (analyses not shown), they are reported anonymously. Noncavitated lesions were found in all two cases, sometimes called “early lesions,” “incipient lesions,” or “white-spot lesions,” which are demineralized lesions that are not cavitated. Radiographs also showed no evidence of occlusal or interproximal lesions. Based on ADA clinical recommendations, the four faculty members proposed sealing teeth 13 and 31 and monitoring or sealing three teeth. There was only one participant who suggested sealing the lesions without operative intervention. Most participants weren't aware of the ADA recommendation to monitor teeth or place restorations. Having graduated from dental school more than ten years ago suggests participants tend to choose restoration for treatment plans. Participants' thinking during treatment planning and after receiving ADA recommendations provides insight into barriers to sealant adoption, as well as helpful behaviors. In order for EB treatment to be more widely adopted, peer groups may be important since peer behavior can influence dentists' acceptance of new treatment approaches. Before making treatment decisions, the participants took into account the history of the patient when making a decision.

### Diagnoses of dental caries

During the interview, the interviewer and participant discussed the dentists' approach to diagnosing caries. More than half said they would make a decision based on whether a sharp explorer stuck in a suspicious lesion, even though they had been informed that the lesions were noncavitated. Also, the term “noncavitated” appeared to be somewhat confusing. Although evidence suggests that explorers are not necessary to detect early lesions,14 participants indicated that their final treatment plan would depend on the use of an explorer.

### Major themes

Three major themes emerged from the interviewer's presentation of ADA clinical recommendations, which provide an explanation of why sealants are not used to treat noncavitated carious lesions. It is believed that sealants do not last, that caries will progress under sealants, and that third-party reimbursement is not available for sealants in adults. Among unfollowed patients, participants were concerned that sealants are technique-sensitive. Many participants who expressed interest in offering sealants to their patients expressed frustration knowing their patients would probably not choose the treatment.

### Solutions that may be possible

In response to a question about solutions to make sure noncavitated carious lesions are sealed, twelve participants said they expected their colleagues' acceptance of the recommendations to impact their own behavior in a moderate to high way. They said that

colleagues provided them with valuable information. The adoption of recommendations would also be affected by a consistent definition of terms, improvements in sealant placement and maintenance protocols, and greater awareness of recommendations, according to participants. "Most of the information that I incorporate into my practice comes from my study group," said one participant.

**Table 1: General dentists' demographics (N = 44).**

| VARIABLE | NO. (%) OF DENTISTS |
|---|---|
| **Type of Practice** | |
| Solo | 34 |
| Group | 10 |
| **Sex** | |
| Male | 26 |
| Female | 18 |
| Age, in Years | |
| 25-34 | 4 |
| 35-44 | 12 |
| 45-54 | 20 |
| 55-64 | 6 |
| ≥ 65 | 2 |

**Table 2: Treatment plans recommended by dentists based on case and tooth number.**

| TREATMENT PLAN RECOMMENDATION | NO. (%) OF PARTICIPANTS (N = 44) | | | | |
|---|---|---|---|---|---|
| | Study 1 | | | Study 2 | |
| | Tooth no. 3 (non-cavitated pit-and-fissure lesion) | Tooth no. 12 (non-cavitated pit-and-fissure lesion) | Tooth no. 17 (white, opaque non-cavitated lesion) | Tooth no. 14 (small, non-cavitated occlusal lesion) | Tooth no. 31 (non-cavitated, chalky white opaque lesion along pits and fissures) |
| Place Conventional Occlusal Composite or Amalgam Restoration | 8 | 14 | 8 | 6 | 20 |
| Open the Fissure and Place a Small Resin/Sealant Restoration | 14 | 12 | 8 | 8 | 8 |
| Reexamine Lesion at Next Recall Visit | 20 | 16 | 28 | 30 | 14 |
| Seal Lesion and Follow Up During Regular Checkups | 2 | 2 | 0 | 0 | 2 |
| TOTAL | 44 | 44 | 44 | 44 | 44 |

## DISCUSSION

Participants generally did not adhere to the clinical recommendations of EB regarding the sealing of noncavitated lesions, similar to previous study [11]. This study's strength lies in its ability to provide insights into dentists' decision-making. Participants' treatment plans were analyzed instead of reports from dentists of their previous treatment. By gaining insight into certain practices behaviors, we may be able to change behavior more effectively than through simple dissemination of information. [12-14] Sealing noncavitated carious lesions requires a variety of factors, including accurate assessment and diagnosis. Based on the findings of the past, participants assessed their risk status. In order to identify appropriate at-risk patients for sealants, this is an important step. The majority of participants recommended using an explorer to diagnose, but several participants were unclear about the term “noncavitated” or “lesion.” Despite our lack of investigation into the reasons for the confusion, one participant's response provides some insight. An experienced practitioner explained. Identifying noncavitated lesions in the early stages is a relatively new addition to dental school curriculums [15, 16] and all but four participants graduated. The dentist cannot seal noncavitated carious lesions if the diagnosis is not accurate or if the terminology used is unclear.

## CONCLUSION

As a result of this pilot study, the majority of participants did not seal non-cavitated carious lesions according to EB recommendations. Long-held beliefs contradicted by scientific evidence pose a challenge to us. Providing health care professionals with information is not enough to initiate behavioral change. To promote acceptance of EB recommendations, study should look for alternative methods. Research from social psychology literature may help dentists modify their behavior by identifying factors that are predictive of clinical behavior. The factors can then be modified.

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