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Knowledge and Attitude about ICDAS Caries Detection among Conservative and Public Health Dentist in Chennai

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Abstract: ***Introduction: The aim of this study is to evaluate knowledge and attitude about ICDAS caries detection among conservative and public health dentistry staff among different colleges in Chennai. To determine the knowledge about ICDAS caries detection among staff of conservative and public health dentistry. Material and Method: A questionnaire survey was conducted among 50 conservative and public health dentist. The results were evaluated and presented. The international caries detection assessment system (ICDAS) present a new technique for the measurement of dental caries developed from the systematic reviews of literature on the clinical caries detection system and other sources. Result: To know the knowledge and attitude of ICDAS caries among conservative and public health dentistry staffs. Conclusion: The ICDAS of future depends on the acceptance of the concepts of integration and utility within a caries detection and assessment system. ICDAS is a valuable method of teaching caries detection and its learning program significantly improves their caries diagnostic skills.***

Keywords: ICDAS, caries

1. Introduction

The International Caries Detection and Assessment System (ICDAS) presents a new technique for the measurement of dental caries developed from the systematic reviews of literature on the clinical caries detection system and other sources [1,2]. All these reviews found that the new caries detection criteria measured different stages of the caries process. The ICDAS can serve as a basis and benchmark for clinical and epidemiological research and inform dental undergraduate and postgraduate teaching in Cariology. The new emphasis on caries measurement and management may indicate that the dental community worldwide has started to recognize that we need new approaches in caries detection, assessment, and management [3]. The development of new technologies and applications has the potential to supplement clinical caries detection, but these assessments will have to be clinically meaningful by providing measurements over and above the rattle of the arrested initial and subclinical lesions [4]. The aim of this study is to evaluate the knowledge and attitude about ICDAS caries detection among conservative and public health dentist.

ICDAS:
The ICDAS activities have been carried out under the supervision of and on behalf of an unfunded, informal, and an adhoc and voluntary committee, which was assembled in an attempt to advance some of the key recommendations in the area of caries detection and assessment criteria. The principles of the ICDAS committee are: integration, scientific validation, and utility of the criteria in different research and practice settings.Dental caries is a dynamic process with cycles of demineralization followed by remineralization. It is hard to categorize a complex disease like dental caries into a scale because the process is continuous and can be measured.The ICDAS measures the surface changes and potential histological depth of the carious lesions by relying on surface characteristics. The primary requirement for applying the ICDAS system is the examination of clean and dry teeth. The ICDAS examination is visually aided by a ball-ended explorer that is used to remove any remaining plaque and debris and to check for surface contour, minor cavitation or sealants. It is highly advisable that the teeth are cleaned with a toothbrush or a prophylaxis head/cup before the clinical examination. The use of a sharp explorer is not necessary because it does not add to the accuracy of the detection and it may damage the enamel surface covering the early carious lesions [5].

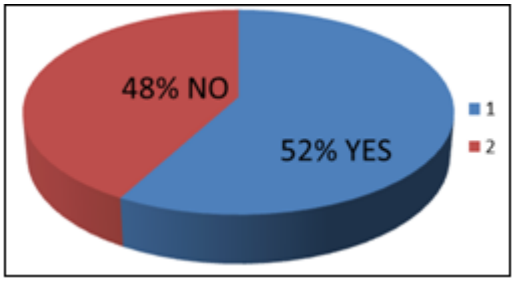
ICDAS CODES:
The ICDAS detection codes for coronal caries range from 0 to 6 depending on the severity of the lesion.
Code 0: Sound tooth surface
Code 1: First visual change in enamel
Code 2: Distinct visual change in enamel
Code 3: Localized enamel breakdown due to caries with no visible dentin or underlying shadow
Code 4: An underlying dark shadow from dentin with or without localized enamel breakdown
Code 5: Distinct cavity with visible dentin
Code 6: Extensive distinct cavity with visible dentin

It is essential to evaluate the clinical application of ICDAS in detection of caries, hence the aim of this study was to analyse the knowledge and attitude about ICDAS caries detection among conservative and public health dentist.

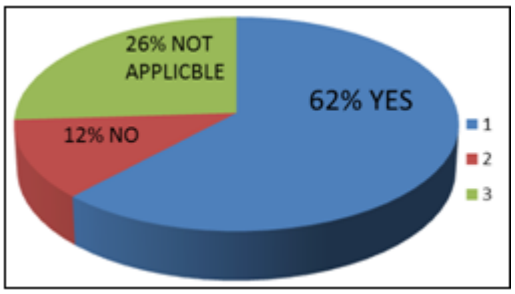
2. Methodology and Results

A questionnaire survey was conducted among 50 conservative and public health dentist. The results were evaluated and presented as follows,

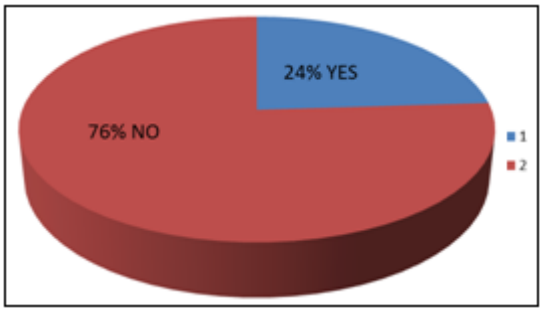
1) Have you read articles where ICDAS is used for evaluation of caries?
   29 (58%) people have read articles where ICDAS is used for evaluation, 21(48%) people have never read.



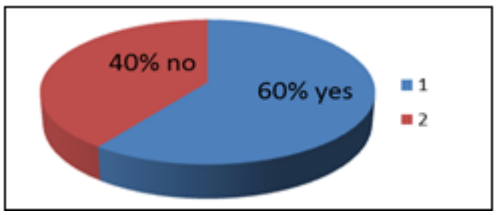
2) If yes, are the reports favourable towards ICDAS in detecting caries over DMFTS?
31 (62%) people says the reports are favourable, and 6 (12%) says its unfavourable, 13(26%) says its not applicable.



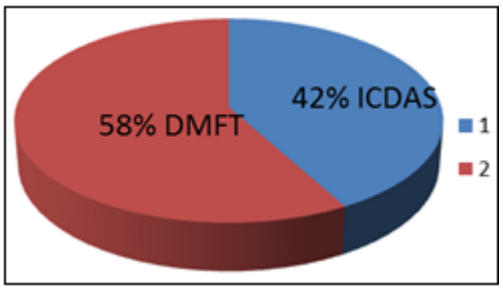
3) Do you follow ICDAS for caries detection?
12(24%) of dentist says they follow ICDAS for detection of caries, 38(76%) says they don't follow ICDAS for detection of caries.



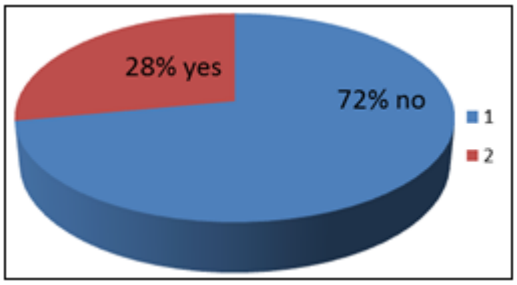
4) Reason, why?
Dentist who don't follow says its complicated, they are unaware of it.
Dentist who follow ICDAS says its very accurate.
5) Is ICDAS method easy to detect the stage of caries?
30 (60%) says yes and 20(40%) says no.



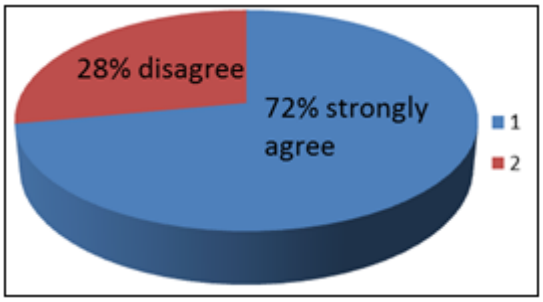
6) Which system is very useful in detection of early carious lesion?
21 (42%) says its DMFT and 29 (58%) says its ICDAS



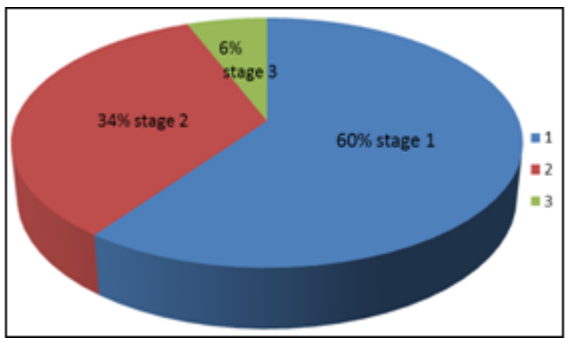
7) Which probe should be used to detect caries?
WHO probe (87%) is used to detect caries.
8) Does DMFT show any details about dental status of caries?
36(72%) says no, 14 (28%) yes



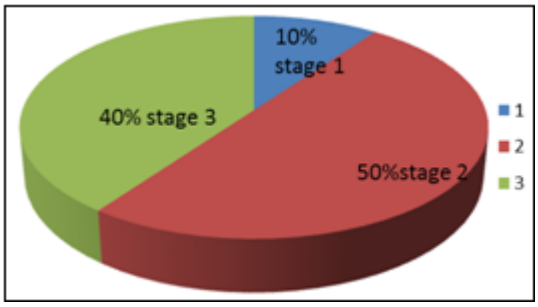
9) Identifying the stage of caries influences the treatment plan?
36(72%) dentist strong agree and 14(28%) disagree



10) First visual change in enamel is a dental term of which stage?
30(60%) of dentist says its stage 1,17(34%) says its stage 2, 3(6%) says its stage 3



11) Distant visual change in enamel is an dental term of which stage?
5(10%) dentist says stage 1, 25(50) says stage2, 20(40%) says stage 3



12) Which of the following guidelines are you aware of (tick one or both)

S.NO		I Am Only Aware	I Have Read
1	Radiographic diagnostic guidelines(ADA)		
2	Systemic fluoride protocol(CDC)		
3	Topical fluoride protocol(ADA)		
4	Guidelines for pit and fissure sealants(ADA)		

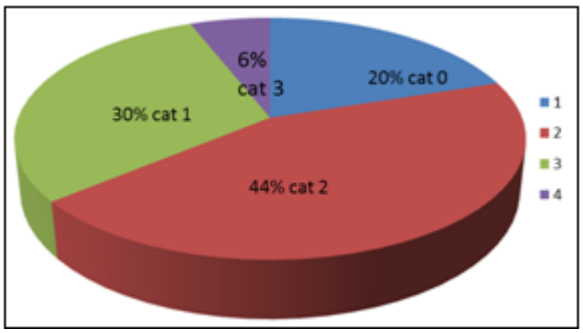
34(68%) of dentist are aware of the following guidelines, and 16(32%)have read the articles.

13) Which of the following are necessary to assess caries risk?

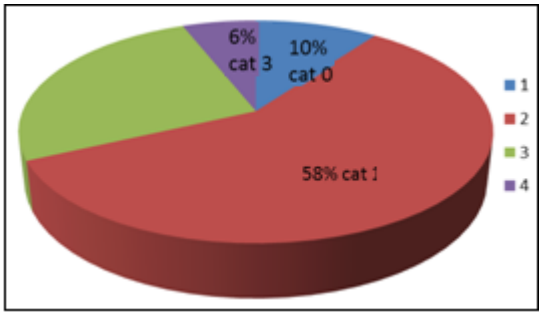
S. NO		Very Important	Important	Less Important	No Correlation
1	Diet				
2	PH salivary assessment				
3	Saliva buffering capacity				
4	Flow rate of saliva				
5	Socioeconomic status				

Every dentist says diet, PH salivary assessment, saliva buffering capacity, flow rate of saliva, socioeconomic status is very important to assess caries risk.

14) Under which categories fluorosis, enamel hypoplasia and tooth wear come?
10 (20%) dentist says it comes under category 0,22(44%) says its 1, 15(30%) says its 2,3(6) says its 3.



15) Pits and fissures comes under which categories of ICDAS?
5(10%) dentist says its comes under category 0, 29(58%) says its 1, 13(26%) says its 2, 3(6%) says its 3.



3. Discussion

Dental caries is a dynamic process with cycles of demineralization followed by remineralization. It is hard to categorize a complex disease like dental caries into a scale because the process is continuous and can be measured. The icdas is a good tool to identify the nature of caries, the icdas has the sub category

Code 0- Pits and fissures; smooth surface (mesial or distal); free smooth surfaces and caries associated with restorations and sealants (CARS) comes under category 0, There should be no evidence of caries. Surfaces with developmental defects such as enamel hyperplasia, fluorosis, tooth wear (attrition, abrasion, and erosion), and extrinsic or intrinsic stains will be recorded as sound First visual change in enamel(code 1): When seen wet there is no evidence of any change in color attributable to carious activity, but after prolonged air drying, a carious opacity or discoloration (white or brown lesion) is visible, which is not consistent with the clinical appearance of sound enamel, or when there is a change of color due to caries it is not consistent with the clinical appearance of sound enamel. Distinct visual change in enamel (code 2) : The tooth must be viewed wet. When wet there is a carious opacity (white spot lesion) and/or brown carious discoloration that is wider than the natural fissure/fossa, which is not consistent with the clinical appearance of sound enamel.

According to present study, 29 (58%) people have read articles where ICDAS is used for evaluation, 21(48%) people have never read. 31 (62%) people says the reports are favourable, and 6 (12%) says its unfavourable, 13(26%) says its not applicable. 12(24%) of dentist says they follow ICDAS for detection of caries, 38(76%) says they don't follow ICDAS for detection of caries. Dentist who don't follow says its complicated, they are unaware of it. Dentist who follow ICDAS says its very accurate. 30 (60%) says yes ICDAS method easy to detect the stage of caries and 20(40%) says no. 21 (42%) says its DMFT is very useful in detection of early carious lesion and 29(58%) says its ICDAS. WHO probe(87%) is used to detect caries. 36(72%) says no DMFT does not show any details about dental status of caries , 14(28%) yes its shows.36(72%) dentist strong agree Identifying the stage of caries influences the treatment plan and 14(28%) disagree. 34(68%) of dentist are aware of the following guidelines(Radiographic diagnostic guidelines(ADA), Systemic fluoride protocol(CDC), Topical fluoride protocol(ADA),Guidelines for pit and fissure

sealants(ADA), and 16(32%)have read the articles. Every dentist says diet, PH salivary assessment, saliva buffering capacity, flow rate of saliva, socioeconomic status is very important to assess caries risk.

Iranzo-Cortezet al in 2017, assess the diagnostic efficacy of the International Caries Detection and Assessment System (ICDAS II) criteria and the DIAGNOdent laser fluorescence (LF) pen in occlusal caries lesions, using histological sections as the gold standard. It was concluded that both methods are efficacious individually but combining the two is recommended to improve the diagnosis (6).

Nogueria et al in 2017, did a study to evaluate, prospectively, the influence of examiner's experience in interpreting and applying the caries detection systems ICDAS (IC) and Nyvad (NY).ICDAS criteria seem to be instinctively understood by students without clinical experience. Nyvad's concepts performed better after two years where the students deepened their theoretical knowledge and experienced clinical practice, collaborating with the identification of activity signs (7).

Melger et al in 2016, did a study to describe and compare findings regarding the prevalence and severity of dental caries when using ICDAS and DMFT/dmft in an epidemiological study with children and their mothers. it was observed that DMFT/dmft index would underestimate 60% of non-cavitated lesions in children and 16.6% in adults. The DMFT/dmft underestimated the presence of disease to disregard non-cavitated lesions for the pediatric population evaluated. Whereas ICDAS gives information about the stage or progression of caries(8).

Wan baker in 2016, did a study to investigate the accuracy of the Canary System (CS) to detect proximal caries lesions in vitro, and compared it with conventional methods: International Caries Detection and Assessment System (ICDAS) II and bitewing radiography (BW).The CS demonstrated greater accuracy in detecting proximal lesions than ICDAS-II and BW, although without significantly higher specificity (9).

Henry et al in 2016, did a study to assess the prevalence of ECC in 0- to 3-year-old children from rural areas of South India, using the ICDAS. The results demonstrate the high prevalence of ECC in this population and the need to consider early diagnosis and specific preventive interventions. For that early diagnosis ICDAS is used (10).

Arangannal et al in 2016, did a study to assess the prevalence of dental caries in school children aged between 6-14 years using the International Caries Detection and Assessment System (ICDAS II).The surfaces with early caries lesion (ICDAS code 2) are more common in the surveyed population. Careful monitoring and the preventive program could decrease the risk for dental caries and minimize the need for invasive and painful treatment procedures in the latter part of their life (11).

Brun et al in 2016, did a study to evaluate The International Caries Detection and Assessment System (ICDAS) of dental caries. The aim of the present study was to compare the ICDAS scores and radiologically evaluated caries depths to the histologically evaluated carious lesions in permanent teeth.The present study indicates an acceptable validity of the ICDAS II criteria when applied to permanent teeth. Especially, dentin lesions can be reliably detected. Thus, ICDAS assessment provides the possibility of reducing X-ray exposure for caries detection (12).

4. Conclusion

The future of ICDAS depends on the acceptance of the concepts of integration and utility within a caries detection and assessment system. ICDAS is a valuable method of teaching caries detection and its learning program significantly improves their caries diagnostic skills.

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