EVALUATION OF KNOWLEDGE AND ATTITUDE OF DENTAL PRACTITIONERS IN DAKSHINA KANNADA TOWARDS NON-INVASIVE MANAGEMENT OF PRE-CARIOUS LESIONS

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Abstract: Dental caries is a highly prevalent multifactorial disease that has been a major oral health concern for many centuries. Pre-carious lesion is the initial carious lesion on the enamel surface resulting from an imbalance between the processes of demineralization and remineralisation.

The goal of modern dentistry is to manage pre-carious lesions non-invasively through remineralisation in an attempt to prevent disease progression. The success of such a management strategy depends upon the knowledge and attitude of dental practitioners in various locations and degree of specialization. As there was limited evidence available in literature about the familiarity regarding non-invasive management, a survey study was designed for evaluating the knowledge and attitude among dental practitioners of Dakshina Kannada district in Karnataka, India. A self-administered questionnaire consisting of 15 questions drafted for the survey using both online and offline approach and data were analysed using descriptive statistics. A total of 751 questionnaires were collected with an overall response rate of 90%, which include 453 (73.3%) of female and 298 (26.7%) of male practitioners. Dental practitioners in Dakshina Kannada were aware of basic knowledge regarding pre-carious lesions (80%) but showed deficiencies in their attitude towards methods of caries detection and management (20%). Therefore, more efforts are required to educate and update the dental practitioners regarding pre-carious lesions from traditional methods to latest contemporary methods by utilizing different modes of non-invasive management techniques such as application of fluorides, casein phosphopeptide amorphous calcium phosphate and resin infiltration etc.

Keywords: Pre-carious lesions, knowledge, attitude, non-invasive

Introduction:-

The management of caries has recently shifted focus to the development of methodologies in the detection of the early stages of carious lesions thus, evolving from the traditional restorative treatment to a preventive non-invasive and minimally invasive treatment approach.[1]

The initial carious lesion on the enamel surface results from an imbalance between the processes of demineralization and remineralisation.[2] Remineralization of pre-carious lesions may be possible with a variety of currently available agents containing fluoride, bioavailable calcium and phosphate and casein phosphopeptide in amorphous calcium phosphate, self-assembling peptide and resin infiltration.[3-6]

The purpose of this questionnaire survey was to evaluate the knowledge and attitude of dental practitioners towards non-invasive management of pre-carious lesions in Dakshina Kannada.

Materials and Methods: -

A self-administered questionnaire based survey was conducted among dental practitioners in Dakshina Kannada. Informed written consent and web based consent from 298 and 453 volunteered dental practitioners for the study was taken. A self-administered questionnaire with a set of 15 questions was used both in online and offline mode by direct and indirect approach. The questions were framed after thorough review of the literature.[2,3,4,5,6] Statistical analysis was performed using SPSS software. Here the simple descriptive statistics was used.

Questionnaire:

1	**What do you understand by the term pre-carious lesions?** a) Enamel lesions b) Dentinal lesions c) Bone lesions d) Both a and b
2	**Other terms used for Pre-carious lesions** a) Incipient caries lesions b) Early carious lesions d) White spot lesion c) Non-cavitated carious lesions e) All the above
3	**Pre-carious lesions can be visible to unaided eye** a) Yes b) No c) May be No d) None
4	**Pre-carious lesions initially appear as** a) White b) Brown c) Yellow d) None
5	**Enamel remineralisation can be considered as natural defence phenomenon** a) Yes b) No c) May be d) Not sure
6	**Saliva helps in the preservation of mineral structure of enamel in the mouth** a) Yes b) No c) May be d) None
7	**Pre-carious lesions will partially disappear visually when the enamel is** a) Hydrated b) Dried c) Polished with cotton d) None
8	**Common age group with Pre-carious lesions** a) <20 years b) 35-50 years c) 20-35 years d) >50 years
9	**How long does it take for progression of Pre-carious lesion into visible cavitated lesion?** a) 10±6 months b) 18±6 months c) 25±8 months d) 13±3 months
10	**Common region affected by Pre-carious lesions** a) Upper anteriors b) Upper posteriors c) Lower posteriors d) Lower anteriors
11	**Standard method of detecting Pre-carious lesions** a) Visual and tactile b) DIAGNOdent c) Fiber Optic Transillumination d) visual and other methods
12	**Pre-carious lesions results from an imbalance between the processes of** a) Demineralisation b) Remineralisation c) Demineralisation and remineralisation d) None
13	**How would you treat Pre-carious lesions?** a) patient education, Fluoride, and remineralising agents b) Wait and watch policy c) Based on severity d) None
14	**The other agents which influence the resolution of Pre-carious lesions?** a) Fluorides c) Tricalcium phosphate b) Resin infiltration d) All the above
15	**Is cavity preparation required for Pre-carious lesions?** a) Yes b) No c) Not sure d) May be

Results: -

A total of 751 questionnaires were obtained with an overall response rate of 90% of which 298 were hand distributed and 453 received online. The mean age range of respondents was 21 – 30 years which includes 73.3% of female and 26.7% male practitioners.

Regarding visibility of lesions to unaided eye, about 48.8% respondents were not sure, 31.3% agreed and 18.3% disagreed. Around three-fourth (75%) of the respondents agreed that remineralisation of enamel is considered as the natural defence phenomenon, 11% disagreed and 10% were not sure. Majority of respondents (91.2%) agreed that saliva preserves mineral structure of enamel, about 5.6% disagreed and less than 2% were not sure. However, majority of respondents of about (70%) agreed that cavity preparation is not required for such kind of lesions, where as 8% agreed and remaining 19.8% were not sure.

TABLE 1:

Results	Yes	No	Maybe
Lesions visible to unaided eye	**31.3%**	**18.3%**	**48.8%**
Enamel remineralisation is considered as Natural defence phenomenon	**75.0%**	**11.2%**	**10.1%**
Saliva preserves mineral structure of enamel	**91.2%**	**5.6%**	**1.6%**
Cavity preparation required	**8.2%**	**70.0%**	**19.8%**

TABLE 2:

Pre-carious lesions are	**Enamel lesions (89.7%)**	**Dentinal lesions (1.7%)**	**Bone lesions (0%)**	**Both a and b (8.6%)**
Lesions initially appear as	**White (79.1%)**	**Brown (14.5%)**	**Yellow (4.8%)**	**None (1.6%)**
Lesions partially disappear visually when the enamel is	**Hydrated (76.3%)**	**Dried (5%)**	**Polished with cotton (18.7%)**	**None**
Common age group	**<20 years (80.1%)**	**20-35 years (8.1%)**	**35-50 years (10.2%)**	**>50 years (1.6%)**
Common region affected	**Upper anteriors (35%)**	**Upper posteriors (19.8%)**	**Lower anteriors (42%)**	**Lower posteriors (3.2%)**
Standard method of detection	**Visual and tactile (25.1%)**	**DIAGNOdent (26.7%)**	**Fiber Optic Transilluminatio n (20%)**	**Visual and other methods (29.2%)**
Lesions results from an imbalance between the processes of	**Demineralisati on (4.8%)**	**Remineralisation (1.8%)**	**Both a and b (87%)**	**None (6.4%)**
How would you treat it	**Patient education, Fluorides and remineralising agents (88.4%)**	**Wait and watch policy (6.4%)**	**Based on severity (5.2%)**	**None**
Agents which influence the resolution of pre – cariouslesions	**Fluorides (16.6%)**	**Tricalcium phosphate (3.2%)**	**Resin infiltration (6.5%)**	**All the above (73.7%)**

Discussion:-

The adoption of non-invasive techniques in management of caries is a desirable dental care practice of importance for the future. The clinical treatment decision making of dental practitioners is influenced by their knowledge and attitude towards non-invasive management of pre-carious lesions. In this study, the dental practitioners of Dakshina Kannada who responded were aware of basic knowledge regarding pre-carious lesions but showed deficiencies in their attitude towards methods of caries detection and management.

The results of this study were similar to findings of the study conducted by Sushanth et al, 2016.[7]It is evident that majority of the respondents (90%) had knowledge about non-invasive management of pre-carious lesions who had either completed their education in dental schools recently or had gained knowledge through advanced education seminars or conferences.Lynch et al., advocated that evidence-based, up-to-date teaching programs, including those in operative dentistry are needed to best prepare students for careers in dentistry.[8]

FDI supports the recommendation that dental caries is an infectious disease and the primary focus. It also advocates that remineralisation of pre-carious lesions of enamel by use of fluoride supplements is possible.[9]

Yet, majority agreed that fluorides, tricalcium phosphate and resin infiltration were effective for treatment. The American Dental Association panel concluded that remineralisaing agents are effective in caries prevention and that remineralising agents can prevent the progression of early pre-carious lesions.[10]

Majority of respondents were almost equally aware of various diagnostic methods used for detection of pre-carious lesions such as visual and tactile, DIAGNOdent, fibre optic transillumination.[11,13,14] Visual diagnosis is the standard method of caries diagnosis [J Gomez, 2014].[12] Anything which is more than 30-40% of mineral loss due to caries is detected with the help of radiograph but if it less than the above will be a pre-carious lesion which is best detected through Visual diagnosis[Klang N T et al, 1987].[15]

Within the limitations of the study it can be concluded that dental practitioners of Dakshina Kannada were aware of basic knowledge regarding pre-carious lesions (80%) but showed deficiencies in their attitude towards methods of caries detection and management (20%). However, more elaborate data collection is required to give a comprehensive result about particular region. The detailed description of non-invasive management of pre-carious lesions should be delivered during the academic and professional training period. Perhaps necessary public health strategies and advances in the academic curriculum are required to emphasize upon the application of the concepts.

Conclusion: -

This study was important as a initiative step in providing information on dental practitioner`s perception with regard to non-invasive management of pre-carious lesions and to offer an insight on future direction to be taken in this area. Dental practitioners of Dakshina Kannada were aware of basic knowledge regarding pre-carious lesions (80%) but showed deficiencies in their attitude towards methods of caries detection and management (20%).Therefore, more efforts are required to educate and update the dental practitioners regarding pre-carious lesions from traditional methods to latest contemporary methods by utilizing different modes of non-invasive management techniques such as application of fluorides, casein phosphopeptide amorphous calcium phosphate, resin infiltration etc.

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