Dental Caries: treatment approach for its diagnosis and management in public hospital

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BACKGROUND

- Dental caries prevention programs for adults have included a variety of preventive regimens since the 1970s. Intensive topical fluoride applications, oral hygiene instruction, and monitoring have been shown to be effective in preventing and arresting dental caries in high risk patients for more than 25 years (1–4).
- However, the modern concepts of caries control emphasizes risk assessment and management of identified modifiable risk factors in addition to intensive fluoride application.
- The Caries Management System (CMS) is a ten-step non-invasive strategy to arrest and remineralise early lesions which is guided by the governing principle that caries management must **include consideration of the patient at risk, the status of each individual lesion, patient management, clinical management and monitoring (5).**
- The CMS was implemented at the University of Sydney, School of Dentistry student clinics in 2017. The effectiveness of CMS is promoting preventive management of caries has not been evaluated in this setting. This study will show **caries risk reduction in Medium/high risk patients who are receiving treatment under caries management system in a public hospital.**

AIMS

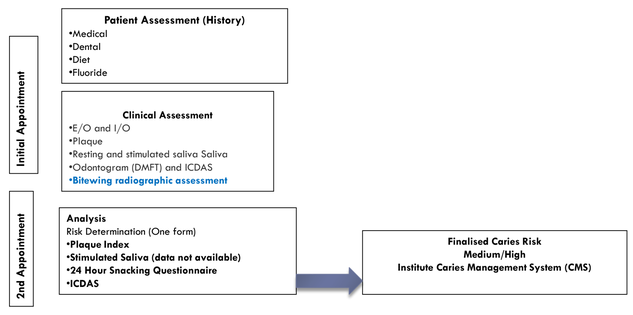
The aim of the present study was to-

investigate caries risk status of the adult patients who are receiving treatment under caries management system in a public hospital.

METHODS

- 100 Medium/high caries risk patients was analysed at baseline and at a 6 months recall.
- A questionnaire collected data about age, gender, region of origin, medical history, past dental history, smoking, fluoride, oral hygiene
- Diet is assessed via 24hr snacking history questionnaire.
- Caries experience was recorded using the International Caries Detection and Diagnostic System (ICDAS) and bitewing radiographic (B/W) assessment criteria.
- Oral hygiene status was assessed using the Plaque Index (PI).
- Resting saliva PH, hydration and viscosity

Medium/High caries risk patient diagnosis



RESULTS

Table 1: Caries risk status in relation to background variables

Background variables	Caries Risk status	
	No change	Positive change
Age (median)		
<48 years	55.6	47.9
48 years and above	44.4	52.1
Gender		
Male	48.1	49.3
Female	51.9	50.7
Country		
Australia	48.1	52.1
Other	51.9	47.9
Medical history		
None	51.9	43.7
Present	48.1	56.3
Water Fluoridation		
None	51.9	40.8
Present	48.1	59.2

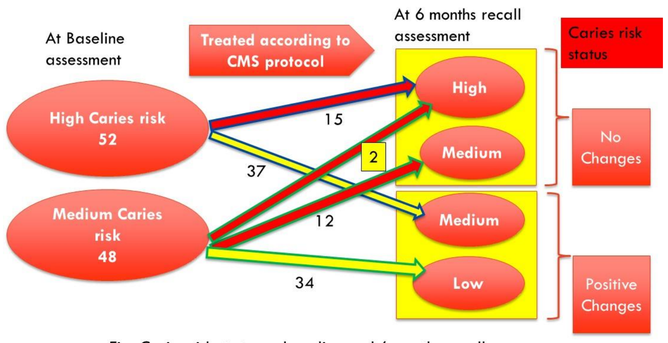


Fig: Caries risk status as baseline and 6 months recall

Table 2: Caries risk status in relation to diet, smoking and brushing status

Risk variables	Caries Risk status	
	No change	Positive change
Diet		
No change	51.9	54.9
Improved	48.1	45.1
Smoking habit		
No change	100	97.2
Improved	0	2.8
Brushing Habit		
No change	85.2	56.3
Improved	14.8	43.7**

**P<0.001, significance tested by chi-square test

Table 3: Caries risk status in relation to plaque and saliva

Risk variables	Caries Risk status	
	No change	Positive change
Overall Plaque score		
No change	33.3	29.6
Improved	66.7	70.4
Saliva pH		
No change	92.6	90.1
Improved	7.4	9.9
Saliva Viscosity		
No change	96.3	77.5
Improved	3.7	22.5*
Saliva hydration		
No change	88.9	90.1
Improved	11.1	9.9

*P<0.05, significance tested by chi-square test

Table 4: Caries risk status in relation to ICDAS coding

ICDAS coding variables	Caries Risk status	
	No change	Positive change
ICDAS 2		
No change	88.9	64.8
Improved	11.1	35.2*
ICDAS 3		
No change	92.6	62.0
Improved	7.4	38.0**
ICDAS 4		
No change	77.8	76.1
Improved	22.2	23.9
ICDAS 5		
No change	40.7	56.3
Improved	59.3	43.7
ICDAS 6		
No change	85.2	90.1
Improved	14.8	9.9

*P<0.05; **P<0.001, significance tested by chi-square test

Table 5: Caries risk status in relation bitewing radiographic assessment coding

B/W coding variables	Caries Risk status	
	Negative change	Positive change
Bitewing classification Code 1		
No change	96.3	76.1
Improved	3.7	23.9*
Bitewing classification Code 2		
No change	88.9	66.2
Improved	11.1	33.8*
Bitewing classification Code 3		
No change	70.4	77.5
Improved	29.6	22.5
Bitewing classification Code 4		
No change	59.3	52.1
Improved	40.7	47.9
Bitewing classification Code 5		
No change	74.1	71.8
Improved	25.9	28.2

*P<0.05, significance tested by chi-square test

Table 6. Results of logistic regression analysis

Risk Variable	Caries risk status (95% CI)		
	Odds ratio	lower	upper
ICDAS 3			
No change	1		
Improved	6.2	1.2	32.5

*P<0.05, significant correlation

DISCUSSION

Our results compare favourably with findings as reported by Katz,5 Johansen et al.,6 and De Paola7 in relation to other programmes dealing with high caries risk. These authors were able to achieve caries incidence levels of close to zero and the remineralization of almost al linitial caries lesions.

An inability to modify dietary habits in the short term was found. In a review of the role of diet in dental caries prevention, van Loveren and Duggal concluded that "most efforts to limit sugar consumption in the population are not very successful. This inability to modify diet means that efforts should be concentrated on other caries risk factors that are susceptible to modification, such as fluoride exposure, plaque control, and monitoring of disease risk; such measures are supported by a strong evidence base.

CONCLUSION

Within a matter of months, factors that have a bearing on the creation of a favourable oral environment can be activated and result in substantial reductions in risk of caries incidence and progression.

This favourable outcome occurred in patients who, prior to their entry to the CMS, were medium/high risk. Therefore, it is reasonable to conclude that the adoption of this approach to caries management more generally would decrease caries incidence and prevalence in the population.

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