

# Status of Preventive Caries Management Skills of Clinical Students Studying in Various Dental Colleges in Karachi, Pakistan.

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## ABSTRACT

**Background:** Unlike in the past, caries nowadays, is stressed to be treated by employing preventive strategies. Though in many countries, treating caries by surgical intervention is reducing but surprisingly most dentists in Karachi, Pakistan continue to treat it by drilling and placing a restoration as primary measure. A question comes to one's mind is whether the graduating dentist from dental colleges in Karachi receive information and training to management caries using preventive strategies or not? This study therefore, was planned to assess the status of teaching about these preventive protocols. Clinical students of dental colleges were chosen as study subjects as they in few months' time become clinicians and practice what they have learnt in their colleges. **Aims and Objectives:** To assess the knowledge and practices of dental students regarding caries management and practices. **Methods:** A face and content validated and pretested questionnaire with close-ended questions was used as a study tool. 250 Clinical dental students studying in five dental colleges in Karachi were the study subjects. **Results:** 215 responses were received at a healthy response rate of 86 %. The most responding students have the knowledge about currently recommended caries preventive strategies but its clinical implementation is very low. Fissure sealing and fluoride applications are the only preventive measures followed by sizeable amount of the responders. **Conclusion:** Participants of this study despite having knowledge about preventive caries management don't practice it in their clinics. For its implementation, CRA based curricula should be introduced.

**Keywords:** CAMBRA, CRA based curricula, preventive caries management

## INTRODUCTION

Despite abundant progress in cariology, associated technology and restorative materials, dental caries remains the most common oral disease and continues to be a global health concern.<sup>[1-5]</sup> Many clinical and public health studies reveal that a number of very effective caries preventive options are available to practicing dentists which may be employed in three phases; primary, secondary and tertiary.<sup>[6-9]</sup> The primary prevention emphasizes on preventing caries incidence by maintaining the patients' oral hygiene and water fluoridation. In the second phase focus remains towards readjustment of the balance between pathological and protective factors attributed to caries.<sup>[4-10]</sup> Measures are taken to control demineralization and to promote remineralization of the tooth tissues. These measure include necessary modification in cariogenic diet, application of fluoride varnish/ gel, mouth rinses and the placement of fissure sealants and therapeutic restorations using Glass Ionomers.

Tertiary prevention focuses on monitoring of the efficacy of all preventive and control measures.<sup>[8-14]</sup> Despite the proven efficacy of these preventive modalities, they are not implemented in clinical dental practices today in many countries worldwide.<sup>[15-19]</sup>

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To involve this evidence – based research into clinical practice, educationalists in USA made preventive caries management, an integral part of curriculum of their undergraduate dental education programs. The clinical students were emphasized to manage caries by risk –based model instead of traditional surgical model. As a result, in USA after two decades, the students who received the preventive -based training when became clinicians started practicing it and the idea to treat caries by surgical intervention is gradually being replaced by

preventive approaches.<sup>[17-22]</sup> Like many other countries, Pakistan seems to be a country where the dentists don't follow preventive - based protocols in their clinical practices. According to a study done very recently, dentists from Pakistan working in Saudi Arabia were found to place intracoronal restorations as a primary solution to treat caries.<sup>[14]</sup> Placement of a restoration as a primary measure to control caries has long been considered incorrect and inefficient as it doesn't halt the caries process.<sup>[20-24]</sup> A question striking one's mind was whether graduating dentists from dental colleges in Karachi, Pakistan have the knowledge and training to treat caries using modern strategies or not? This study therefore, was planned to assess the status of knowledge for caries management of clinical students studying in various dental colleges in Pakistan and its implementation during clinical sessions. The clinical students were included in the study with thought that they would become clinicians in short span of time

### Objective

To evaluate the knowledge versus practices of clinical dental students studying in five dental colleges in Karachi, Pakistan.

## MATERIALS AND METHODS

It was a cross sectional study based on a survey conducted using a meticulously prepared, face and content validated questionnaire as a study tool. The approval to conduct the study was granted by the ethical committee of the institution. The 12 - item close ended questionnaire was pilot tested among 12 dental college junior faculty members at an interval of one week and received 100% correct information. The internal consistency of the questionnaire was determined using Cronbach alpha test which yielded the value of 0.76 which makes it acceptable score under reliability. For the sake of secrecy, no personal identifying information was obtained from the respondents.

The questionnaire comprised of two parts. The 1<sup>st</sup> part consisted of six questions regarding theoretical knowledge of the students which they receive through text books and class room teaching related to caries management by risk assessment. The 2<sup>nd</sup> part comprised of humble queries regarding their practice of clinical caries management (CAMBRA). Assessment of participant's knowledge and its clinical implementation included items on caries risk assessment, role of bacteria, role of saliva, use of Fissure Sealants, role of Chlorhexidine mouth rinses and Varnish, role of Fluoride varnish, role of dietary analysis and counseling.

The questionnaire in English language was distributed among the clinical students of five dental colleges operating in Karachi chosen on our convenience. The sample size was assessed on the

basis of number of admissions permissible to a dental college from Pakistan Medical and Dental Council (PMDC) which is a monitory and licensing authority for medical and dental education in the country. The PMDC generally allows 50 admissions to each college per year. At this rate, total expected participants may have been 50x5 (250). Assuming 80 % response rate, the sample size was determined to be 200. The students were explained about the purpose of the study before the distribution of the questionnaire. All the students eagerly consented to participate in the study and filled out the survey form. The data was analyzed using Statistical package for social sciences version 20 and was displayed as bar and pie charts.

## RESULTS

The clinical students studying in various dental colleges in Karachi responded at a healthy response rate of 86 % (n=215) including 180 females and 35 males. It is evident from the findings of this study that most of the responding students have comprehensive knowledge about clinical management of caries but its implementation is almost negligible. Fissure sealing and Fluoride application are the two measures employed by around 50 students. That too is very unhealthy percentage (23 %) of respondents who clinically perform these preventive measures [Figure 1].

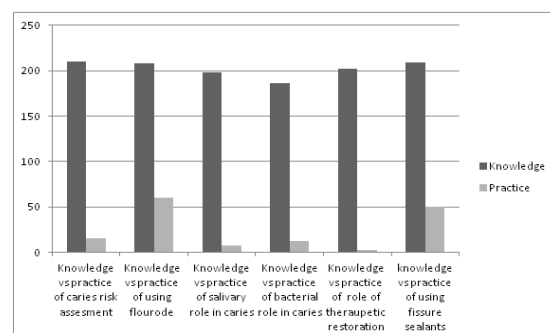
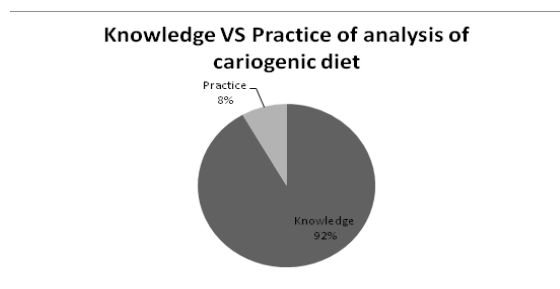
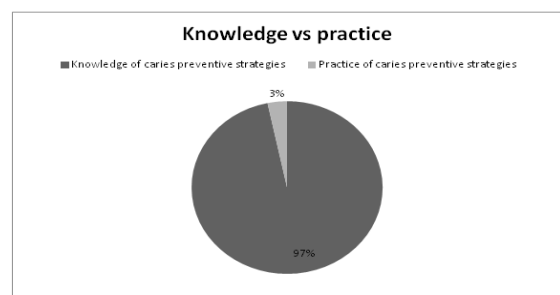


Figure 1: Knowledge VS practice.

Diet analysis of the patients and counseling on its essential modification is an important clinical protocol to save the patients from agony of having dental caries. Absolutely insignificant percentage (8 %) of the students perform this duty whereas the majority of them is least bothered to give a piece of mandatory dietary advice to their patients [Figure-2]. The most number of students (97 %) despite having up-to-date knowledge about preventive management strategies, merely 3 % of them incorporate it in their clinical practices. It depicts that majority of them place a restoration as primary resort to treat the caries using drilling and filling technique [Figure 3].



**Figure 2: Knowledge VS practice of diet management in dental caries.**



**Figure 3: Over All knowledge VS Practice of Caries preventive strategies**

## DISCUSSION

Majority of the participating students in this study treats caries by placing a definitive restoration as a primary measure which is not recommended in today's dentistry. They neither identify patient's caries risk, test saliva, check bacterial count nor place any therapeutic restoration. Irrespective of patients' caries risk assessment, they treat it using old philosophy of drilling and filling. Highly comparable findings are presented in a similar study conducted on senior clinical students of various universities in Iran.<sup>[1]</sup> A USA- based study done on implementation of preventive caries management practices in various dental schools gives contradicting findings. It shows that a shift in emphasis appears to have occurred in dental schools toward assessment of caries risk, modern management of the disease, and delayed restoration until the cavity has enlarged to a critical threshold.<sup>[4]</sup> The reason for the conflicting findings may be that in USA, caries risk assessment has been incorporated into clinical caries management curricula in majority of dental teaching institutions.<sup>[7,8]</sup>

Most of the preventive measures like arresting a lesion or remineralization should be taken by a clinician before involving a carious lesion into restorative cycle. All such preventive measures are ignored by the participants of this study which match the findings of a Southeastern Europe study.<sup>[3]</sup> The probable cause may be non-implementation of caries risk assessment protocols in undergraduates' curricula.

A recognizable percentage of participants of this study perform fissure sealing and Fluoride

application in their practices. This finding is in agreement with the north American studies which show that high percentage of dentists employ fissure sealants wherever indicated.<sup>[12,20]</sup> Regarding use of Fluoride, our findings match results of an American study<sup>6</sup> but fluoride varnish is underutilized by respondents of this study as well as another study done to assess CAMBRA-based programs in North American dental Schools.<sup>[22]</sup> May be unlike fluoride gel, role of varnish has not been appropriately emphasized during undergraduate classes. .

The apparent reason for acceptance of fissure sealing and fluoride application more than other caries preventive measures may be that these two procedures have been included in curricula of dental schools universally, far before the current CAMBRA recommendation. Moreover, the interventional nature of this procedure satisfy the patients more and make them feel that some treatment has been provided. On the contrary, other preventive measures as caries risk assessment, dietary analysis and counseling, saliva testing are non-interventional procedures.

Regarding dietary analysis and counseling, the majority of the responding students seems to have knowledge but significantly less number of students analyzes the diet and give needed advice on dietary modification. A study done in India including dental interns as participant's shows the similar results.<sup>[21]</sup> It divulges the fact that curricula don't emphasize on this crucial caries preventive aspect.

It has been generally observed that dental students possess updated teaching information about CAMBRA strategies<sup>5</sup> but this theoretical knowledge is not applied during clinical sessions in the dental colleges contributing in the study. The students can still be observed unnecessarily drilling an incipient, arrested or inactive lesions to restore it with a restorative material.

The logical reason behind it may be attitude of teachers in Operative Dentistry clinics who are continually seen assessing their students on psychomotor skills related to digging out carious lesions and restoring it with amalgam or composite. They don't assess the preventive strategies employed by the operating student. The students therefore focus more on developing their psychomotor skills in restorative procedures than assessing caries risk or applying preventive measures. These students in future when they work as licensed clinicians continue to treat caries by drilling and filling in their private clinics and hospital jobs. On the other hand, in United States slowly but gradually number of schools is increasing where clinical competency of a dental student is evaluated on management of caries by risk assessment.<sup>[24]</sup>

To improve patients' oral health, dentists can play an important role not as dentists but as oral Physicians for which it is imperative that new graduating dentists be produced with most current and evidence-based ideas of preventive measures in dentistry. The requirement for producing highly proficient and skilled dentists (oral physicians) can be fulfilled by incorporating more evidence-based caries preventive programs in the undergraduate dental curricula. Such academic course should emphasize the significance of prevention in dental students' future practice and provide extensive hands-on training in the use of caries prevention skills. The outlook of these students concerning caries prevention can influence their interest in training and subsequent involvement in preventive measures they would deliver in future clinical practices. Though shifting from one philosophy to another one is challenging and will need patience and determination over the period of time to make CAMBRA the custom for caries management in the country.<sup>[18,19]</sup>

The limitation of the study requires mentioning here is the data comprise of dental colleges from one city of Pakistan. More comprehensive studies are recommended including institutions from other parts of the country to collect representing data.

## CONCLUSION

Dental students of participating dental colleges are provided with didactic knowledge of preventive caries management but its clinical implementation is inadequate and need stress through curricular integration.

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