



ORIGINAL RESEARCH PAPER

Dental Science

SPECTRUM OF KNOWLEDGE, CONFIDENCE, AND INTENDED BEHAVIOUR AMONG DENTAL STUDENTS AND INTERNS TOWARDS CARIES RISK ASSESSMENT, DIAGNOSIS AND TREATMENT

KEY WORDS: Caries Risk Assessment, Caries Diagnosis, Medical Management of Caries

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ABSTRACT

INTRODUCTION: Dental caries risk experience can be predicted by weighing risk factors against existing protective factors. This process is called Caries Risk Assessment.
AIM: Aim of the study was to assess dental students' knowledge, attitudes, and intended behaviours regarding caries diagnosis and treatment through a survey questionnaire.
MATERIALS AND METHODS: A survey was conducted at the Department of Conservative Dentistry and Endodontics, Army College of Dental Sciences, Secunderabad. 60 undergraduate students participated of which 30 were final year students and 30 were interns.
RESULTS: Final year students answered 76% knowledge based questions correctly as compared to Interns who answered 83%. Final year students showed mean confidence in diagnosis of caries and treatment planning of 7.5 which increased to 9.5 in interns group.
CONCLUSION: Interns showed more confidence in caries diagnosis and formulating a caries preventive strategy as they work more clinical hours per week as compared to final year students.

INTRODUCTION

Dental Caries is a widely prevalent chronic disease [1].
 Dental caries, in the absence of intervention, progresses to the point where it can cause difficulty in mastication and communication which affects the quality of life [2].

The understanding of the fact that dental caries is a disease initiated by a complex biofilm rather than any one pathogen, which changes dynamically with its environment and the local chemistry of the tooth site, pellicle, and saliva is important. Caries management must determine which of the many possible factors is causing the expression of disease and take corrective action.

The phrase 'Caries Management by Risk Assessment' or 'CAMBRA' is used to determine a risk-based approach to prevent, reverse and, when necessary, repair damage to teeth using minimally invasive methodology. CAMBRA is a concept for managing dental caries and its manifestations. It involves (i) assessing the risk for future caries lesions, (ii) reducing the pathological factors, (iii) enhancing the protective factors, and (iv) minimally invasive restorative care, resulting in control of the disease [3].

This paradigm shift in the etiology, prevention, and treatment of dental caries demands that clinicians redirect their focus and emphasis from the "surgical" approach to dental caries to a "medical" strategy [4].

The risk assessment of current and future caries experience can be determined by weighing all the disease indicators and risk factors against existing protective factors. This process is called CRA (Caries Risk Assessment). The model used is caries balance/imbalance model. It is a visual depiction of the multifactorial nature of dental caries. It illustrates the determining factors of caries disease, and the dynamic interaction of the biofilm with the oral environment. The local environment that determines how the biofilm will behave at any given tooth site and if the disease is severe enough, to result in demineralization and visible changes to the tooth site [5].

Considering all this, a major factor in bringing the desired change and implementation of the CRA is evaluating the diagnosing ability of undergraduate dental students. Because their knowledge about

the initiation of caries, its diagnosis and treatment needs, along with their attitudes and intended behaviours can influence the future caries risk of patients. Hence, the aim of the present study was to assess the knowledge, confidence, and intended behaviour among dental students and interns towards caries risk assessment, diagnosis and treatment.

MATERIALS AND METHODS

Study Subjects:
 The survey was conducted at the Department of Conservative Dentistry and Endodontics, Army College of Dental Sciences, Secunderabad. 60 undergraduate students participated out of which 30 were final year dental students and 30 were interns who had either completed their clinical posting in the Department of Conservative Dentistry and Endodontics or were currently posted in the department.

Study Design:
 The survey was conducted in the middle of the academic year to ensure the academic knowledge that was included in the survey in the form of questionnaires had already been taught according to their curriculum. The survey was conducted during their clinical hours. A brief introduction was given to the students and interns about the survey before starting. The survey questionnaire included a total of 22 questions divided into three categories- Evaluation of confidence that is attitude towards caries diagnosis and treatment. This included a total of six questions. (Figure 1)

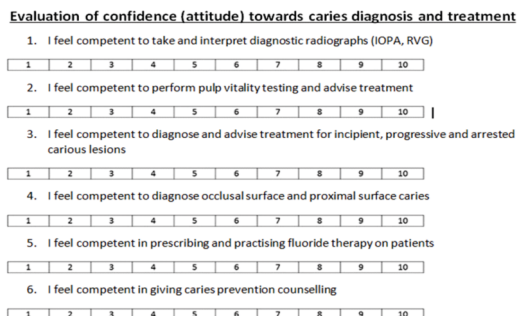


Figure 1 – Evaluation of confidence (attitude) towards caries diagnosis and treatment.

2) Evaluation of intent towards caries diagnosis and treatment. This included a total of seven questions. (Figure 2)

Evaluation of intent

Please circle one number for each	Strongly disagree	Disagree	Agree	Strongly agree
I visit dental camps in the vicinity of my college regularly	1	2	3	4
I evaluate Caries Risk Assessment for patients with questionable hygiene	1	2	3	4
I am willing to provide caries treatment for patients who are mentally challenged	1	2	3	4
I feel professionally inclined towards restorative dentistry	1	2	3	4
I am willing to update my dental knowledge by regularly attending conferences and reading new caries detection and treatment methods	1	2	3	4
I am aware of the followup protocol	1	2	3	4
I intend to keep myself ready to deal with any endodontic emergency	1	2	3	4

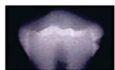
Figure 2 – Evaluation of intent.

3) Evaluation of knowledge regarding caries diagnosis and treatment plan. This included a total of eleven questions. (Figure 3A, 3B)

Evaluation of knowledge regarding caries diagnosis and treatment plan



- A) The above given picture shows pit and fissure caries?
 - Yes
 - No
- The treatment will be -
 - Amalgam
 - Composite
 - PRR with minimal drilling



- A 30 year old female patient with previous history of multiple restorations and generalised calculus. Based on the above IOPA what would be your treatment plan?
 - Preventive restoration
 - Permanent restoration
- DIAGNODent is -
 - Caries removal technology
 - Radiographic caries assessment technology
 - Laser caries detection technology
- Which kind of radiograph is most commonly used to examine interdental caries and recurrent caries under existing restorations?
 - IOPA
 - CJPG
 - OCCLUSAL
 - BITEWING
- What is the percentage of fluoride used in KNUTSONS TECHNIQUE is 2% NaF?
 - True
 - False
- Rampant dental caries is diagnosed if there are -
 - More than 5 new carious lesions per year
 - More than 10 carious lesions per year
- Xerostomia causes increased caries risk -
 - True
 - False
- CARISOLV is minimally invasive caries removal technique -
 - Yes
 - No
- Incipient root surface caries is treated by -
 - Restoration with appropriate material
 - Extraction
 - Remineralization therapy
- A) What is the full form of ART in restorative dentistry
 - Asymptomatic restorative technique
 - Atraumatic restorative technique
 B) which material is most commonly used in ART
 - Amalgam
 - Composite
 - GIC



- What would be the ideal treatment plan for this patient?
 - Preventive resin restoration (PRR)
 - Class I conservative cavity preparation with restoration

Figure 3a and 3b - Evaluation of knowledge regarding caries diagnosis and treatment planning.

The confidence was evaluated using a ten-point scale with one representing lowest confidence score and ten being the highest confidence score. A four-point Likert scale was used for the seven questions depicting the attitude. The absence of a neutral midpoint forced respondents to express an opinion. Knowledge regarding caries diagnosis and treatment planning was assessed using eleven multiple choice-based questions. Few questions were based on clinical photographs of carious lesions. Fig. 3a

RESULTS (Graph 1)

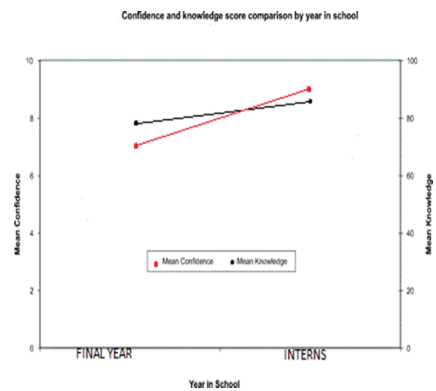


Figure 4 – Confidence and knowledge score comparison by year in school

70% of the respondents in each group were females.

Final year students answered a mean of 76% knowledge-based questions correctly as compared to Interns who answered a mean of 83% questions correctly.

This shows an upward trend in knowledge.

Confidence in diagnosis of caries and treatment planning also showed an increase in trend from final years to interns. Final year students showed a mean confidence of 7.5 which increased to 9.5 in interns group.

A positive association was seen between years of instruction and perceived confidence in caries risk assessment.

Compared to students in internship, fewer students felt confident in their ability to provide preventive counselling to patients with a mean confidence of 1.5.

When asked about the willingness to provide CRA in patients with questionable hygiene, the intention remained divided with over 20% of interns and 25% of final year students unwilling to provide CRA to patients due to lack of confidence.

Dental students' intended behaviour in treating mentally challenged patients remained mostly unchanged by years of instruction with 100% of them willing to provide treatment.

However, all interns and final year students were willing to read more journals and articles to update their knowledge about the latest trends in Restorative Dentistry and Endodontics.

DISCUSSION

Following this survey, it was clear that clinical experience and years of instruction change attitude, confidence and knowledge whereas the intent remained the same.

Increased clinical exposure plays an important role in building confidence for caries diagnosis and treatment planning. Compared to students in internship, fewer students felt confident in their ability to provide preventive counselling to patients. A positive association existed between years of instruction and dental students' perceived confidence in providing preventive counselling. The final year students lack the kind of clinical exposure as interns which play a major role in confidence building. A similar survey was conducted by Jaana T et al to evaluate the dental students' opinions and knowledge about caries management and prevention. This study highlighted the need to include specific caries management and prevention programmes in the dental curriculum as the use of caries preventive measures were not specific and defined. (6)

Ability to implement a CRA form in a dental school requires efficiency in performing CRA by students and faculty. The caries

risk assessment (CRA) form should be customised to the level of students' ability, time required and feasibility to conduct CRA and should cater to the local population. CRA form should include to the point tests, simple language and systems customised for diverse patient, student, and faculty groups. (7)

An important purpose of this survey was the need to actively introduce a specific format for caries assessment and prevention in the local population and educate the fourth year students and interns about the regional prevalence of caries. Knowledge based questions helped assess adequacy of theory knowledge in this regard.

As for confidence in implementing knowledge, interns showed more confidence in caries diagnosis and formulating a caries preventive strategy, probably as they have more clinical hours per week as compared to the students in final year curriculum. This adds experience of practical application to theory knowledge, reinforcing it.

It was heartening to discover that both interns and final year students were willing to read journals along with their curriculum to increase their knowledge about caries diagnosis and treatment planning.

The attitude of both students and interns was positive when it came to treating special patients.

But the process of implementation of CAMBRA requires time and dedication. A study conducted in the School of Dentistry, University of California, San Francisco showed that compliance amongst dental students was the most important factor in documenting caries risk. This took a decade of implementing risk-based clinical guidelines at this dental school clinic to achieve. (8)

CONCLUSION

Interns showed more confidence in caries diagnosis and formulating a caries preventive strategy as they work more clinical hours per week as compared to the students in the final year curriculum. This gives them added experience of practical application of their theory knowledge.

The attitude of all the students was positive when it came to treating special patients. Interns and final year students showed positive response to reading journals along with their curriculum to increase knowledge about caries diagnosis and treatment planning.

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