



# The Amount of Knowledge Awareness on the Caries Risk Assessment Tools and It's Management Strategies in Children among Dental Students

T. Ushanthika <sup>a#</sup> and Mebin George <sup>b++\*</sup>

<sup>a</sup> Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Science, Saveetha University, Chennai, India.

<sup>b</sup> Department of Pediatric Dentistry, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Science, Saveetha University, Chennai, India.

## Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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## ABSTRACT

**Introduction:** Early detection of risk factors and implementation of oral health preventative activities can help to slow or stop the spread of caries. As a result, dentists must be well-versed in a variety of approaches and early preventative methods.

**Aim of the Study:** The aim of the study is to create knowledge and awareness on the caries risk assessment tools and it's management strategies in children among dental students.

**Methodology:** A questionnaire survey was carried out online containing 10 questions and was sent to 100 students on the caries risk assessment tools and it's management strategies in children among dental students. An online survey was conducted using survey planet software and the data was collected and completely analysed for statistical difference.

# Undergraduate;

\*\* Reader;

\*Corresponding author: E-mail: drmebingmathew@gmail.com;

**Results:** According to our findings, the majority of undergraduates believe that a child should see a dentist between the ages of 12 and 22, and that specific information gained from a systematic assessment of caries risk guides the dentist in the decision-making process for treatment and preventive protocols for children (66 percent of undergraduates and 18 percent of postgraduates).

**Conclusion:** Dental practitioners have a critical role in preventing and minimising the severity of ECC in young children, and they can use preventive treatment regimens to assess their paediatric patients' caries risk.

*Keywords: Oral health; children; caries risk assessment tools; survey; innovative study.*

## 1. INTRODUCTION

Caries is the most frequent chronic childhood disease and a substantial financial burden on society, despite significant progress in affluent countries. Although dental caries frequency has decreased dramatically among school-aged children since the early 1970s [1], caries rates among children aged 2–5 years have grown, according to a 2007 study by the Centers for Disease Control and Prevention. Early childhood caries (ECC) was verified as the most frequent chronic childhood condition, with ECC being five times more common than asthma and seven times more common than hayfever. ECC is more prevalent among young children in low socioeconomic populations and among racial/ethnic minorities who are also more likely to face barriers in accessing care [2]. Caries is a preventable infectious disease and it is well-documented that one of the best predictors for future tooth decay is the presence of current caries or evidence of prior caries experience.

Despite growing knowledge of the incidence of ECC, infant oral health care and the development of a dental home by the age of one year, or when the first tooth erupts, has yet to become the standard of care in clinical practise [2]. Preventing the start of ECC is more cost efficient than treating severe caries, according to several studies [3,4]. Comprehensive oral care appointments for preschoolers are typically far less expensive than emergency hospital treatment or major restorations that require sedation or general anaesthesia [4,5]. Early detection of risk factors and implementation of oral health preventative activities can help to slow or stop the spread of caries.

The foundation for health care providers and parents/caregivers to identify and understand the child's ECC risk factors is a customised risk assessment of an infant or toddler for acquiring caries (4,5) (6). The precise information gathered from a thorough assessment of caries risk aids

the dentist in making treatment and preventive protocol decisions for children who have already been diagnosed with the condition as well as those who are at risk. Caries risk assessment should be done as soon as feasible, preferably prior to the commencement of the disease process, for best results. Caries risk assessment and therapeutic therapy of the disease, as well as subsequent follow-up, are critical because caries in the primary dentition is a strong predictor of caries in the permanent dentition. An interview with the parent and a clinical examination of the child are used to evaluate risk factors [6,7].

In practice, the caries risk assessment would begin in the dental office with an initial interview with the parent or caregiver [7,8]. Biological or lifestyle predisposing risk factors that contribute to the development or progression of caries should be explored during the evaluation interview. Recent dental restorations or active caries in the mother, low health literacy of the caregiver, frequent intake of fermentable carbohydrates by the infant, sleeping with a bottle containing liquids other than water, and prolonged use of a sippy cup containing milk, juice, or a sweetened beverage are all examples of these risk factors. To determine if risk factors outweigh protective factors or vice versa, the practitioner can simply circle "Yes" alongside the risk or protection factors that apply, resulting in a risk status of low, moderate, or high. The level of risk will then determine which treatment path to choose. Disease signs, including as cavitated carious lesions, white spot lesions/decalcifications, and recent restorations, are obtained from a child's clinical examination and are indicative of current and active caries. Plaque, gingival bleeding (an sign of poor dental hygiene), and dry mouth are all biological risk factors that can be detected during a clinical examination. Plaque retention and caries risk are increased in older children who have dental or orthodontic appliances [8,9].

In identifying a child's risk, the clinician's knowledge, expertise, and personal historical experience with his patient and the child's caregivers is critical, as it serves as the foundation for a tailored treatment strategy for each infant/caregiver. These specific patient conditions and dangers will assist the practitioner and parents in comprehending the aspects that contribute to or protect the patient from dental caries. Reassessment of risk factors and monitoring the progress of improvements in established self-management goals are essential elements of infant oral care visits. Modifications of recommendations or positive reinforcement for successful changes are necessary to achieve and sustain successful risk modification. Parents should be reminded that changing risk factors and lifestyles do not happen overnight and require persistence [9,10]. Our team has extensive knowledge and research experience that has translated into high quality publications [10-29].

## 2. MATERIALS AND METHODS

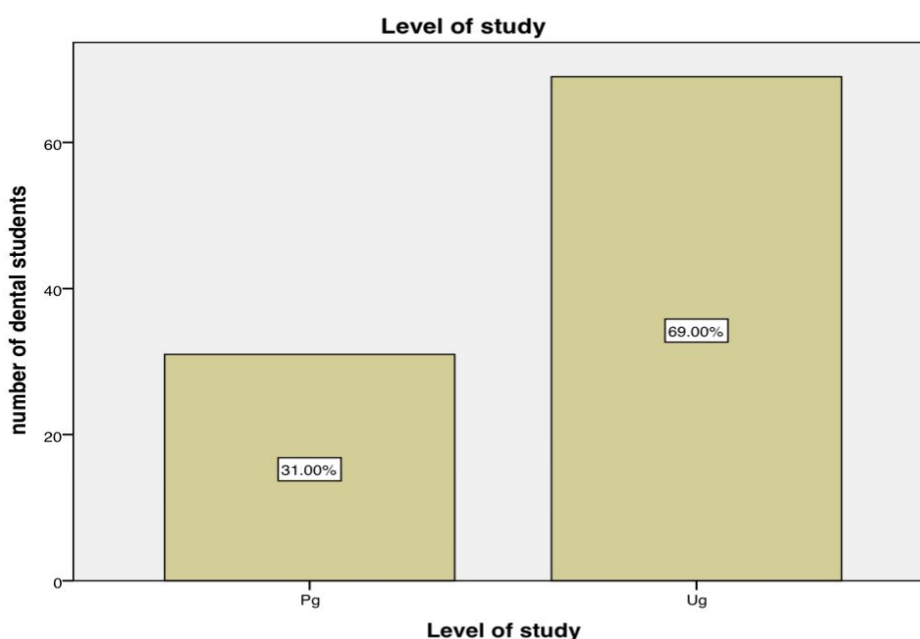
The present study is a survey based study. The sample size of the study is 100 dental students and the sampling method is a simple randomized simplifying method and a set of questionnaires being created using google forms on the knowledge and awareness of the caries risk assessment tools and it's management

strategies in children among dental students. The data was then transferred to excel sheet and SPSS variable definition process was done using table and graphical illustration. By using the statistical software IBM SPSS version 2.0 statistical test like descriptive statistic test and inferential statistics were done keeping demographics. followed by Chi square which was done on the data obtained, the type of analysis that was done were correlated. It was approved by the institutional review board. The statistical study used in the study was Chi square test with p value less than 0.005 and confidence interval of 95%.

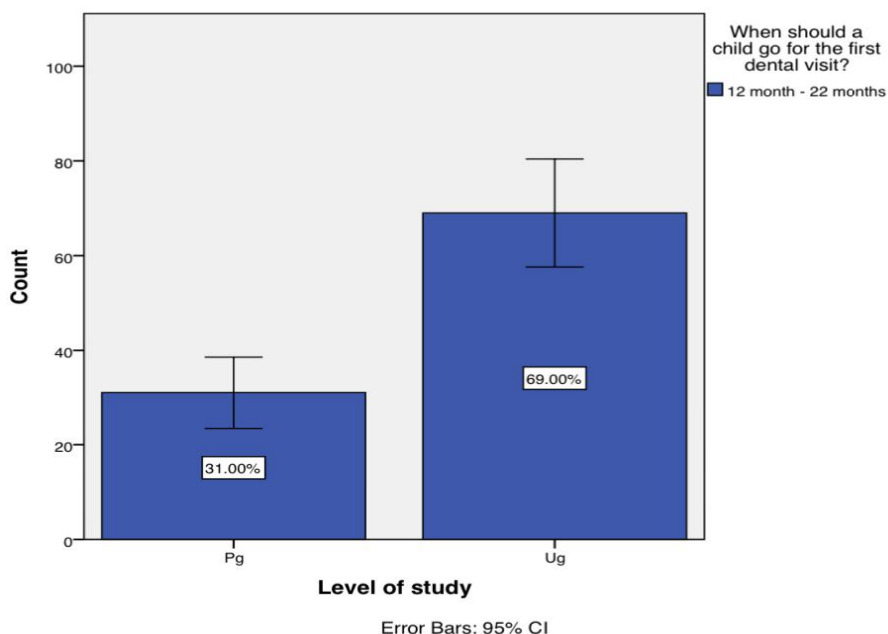
## 3. RESULTS AND DISCUSSION

In this study 69% of them were undergraduates and 31% of them are postgraduates. In our study 47% of the undergraduates and 24% of the post graduates analyse the caries risk assessment before doing a treatment and 22% of the undergraduates don't.

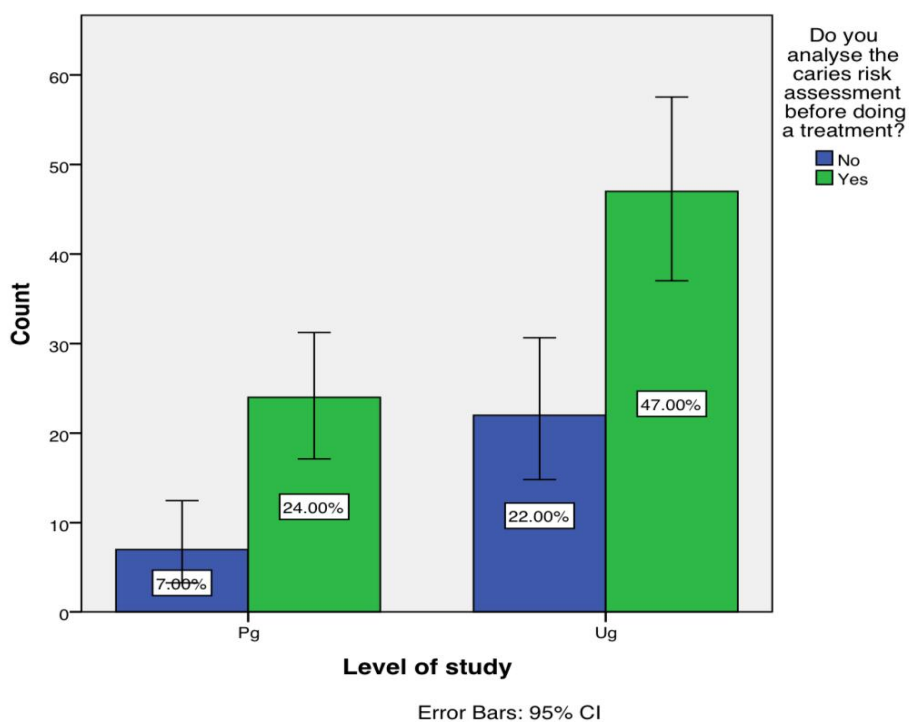
The particular information obtained from a comprehensive assessment of caries risk aids the dentist in making decisions about treatment and preventive regimens for children with dental disease and those at risk. The caries risk assessment should be done as soon as feasible, preferably before the development of disease, to ensure the optimum management and outcomes for good oral health.



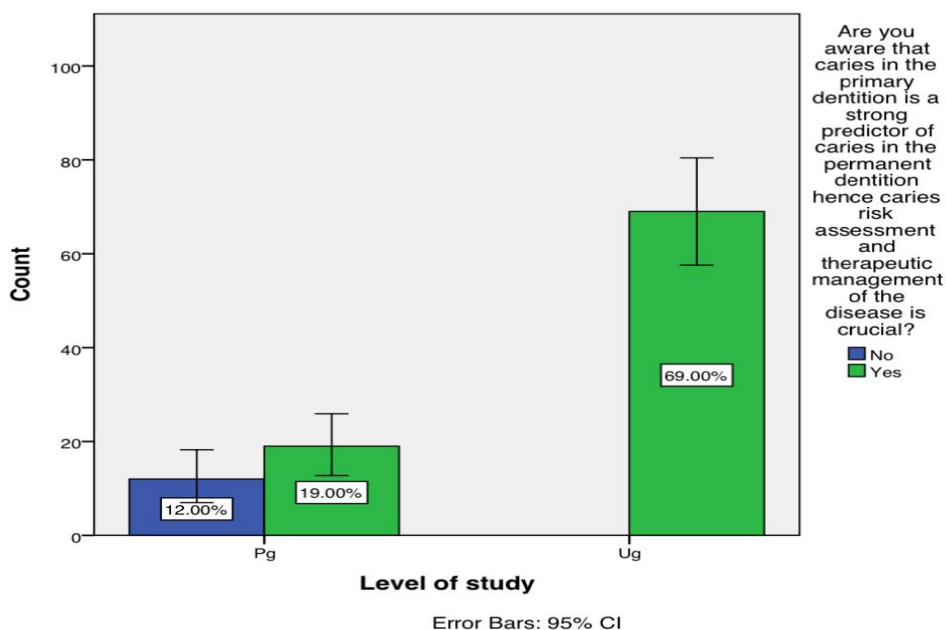
**Graph 1. The bar chart depicts the level of study of the dental students. X-axis represents the level of study and the y-axis represents the number of students. In this study 69% of them were undergraduates and 31% of them are postgraduates**



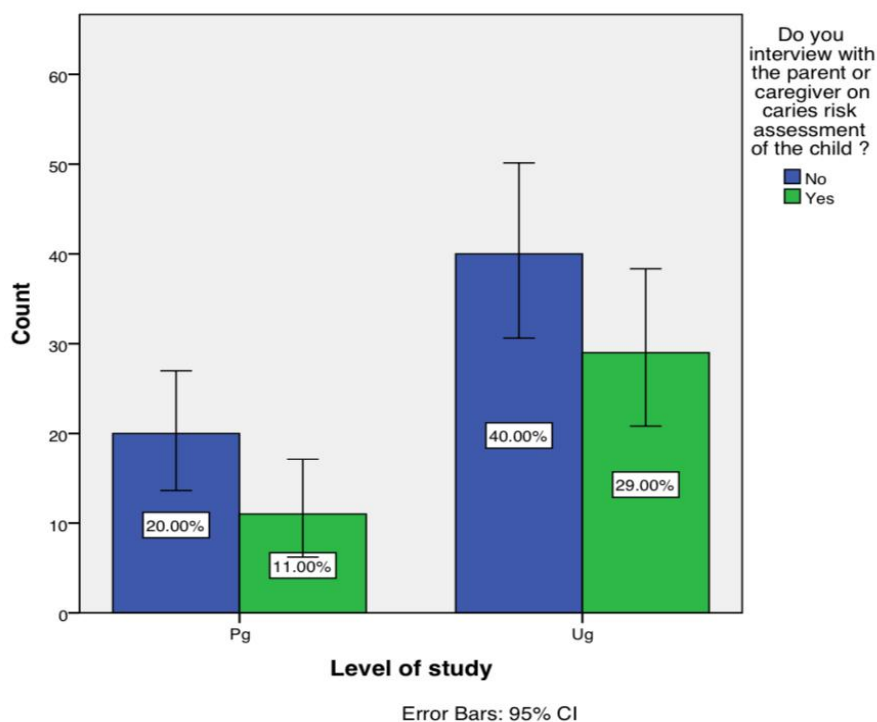
**Graph 2. Bar chart depicting level of study and when do the dental students think a child should have his/her first dental visit, where 69% of the undergraduates and 31% of the post graduates thought that the child must visit from 12 months to 22 months**  
*Chi square test was done, p value is found to be statistically significant ( $p < 0.05$ )*



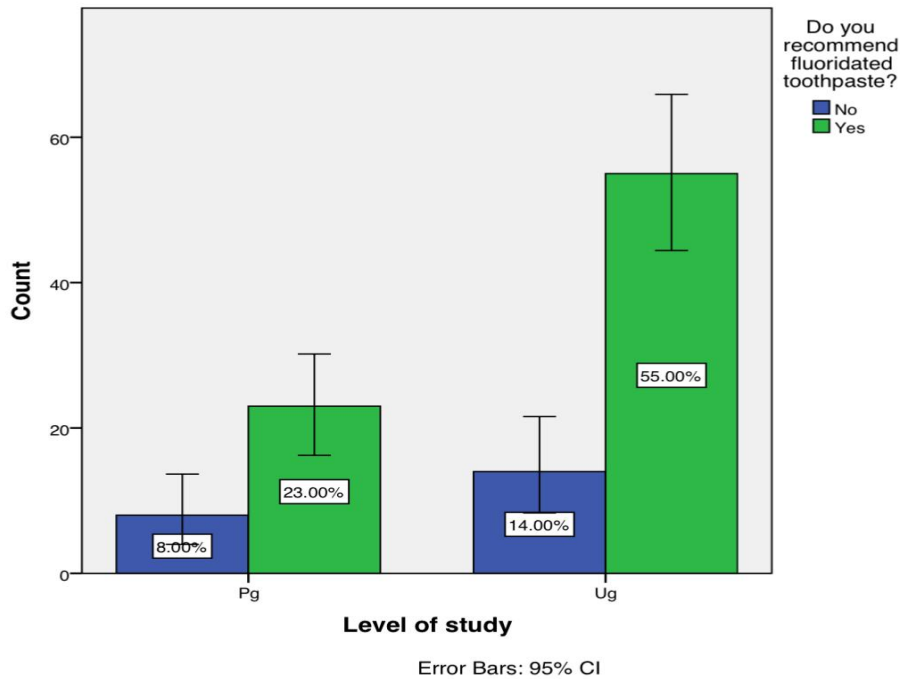
**Graph 3. Bar chart depicting level of study and if the dental students analyse the caries risk assessment before doing a treatment, where 47% of the undergraduates and 24% of the post graduates analyse the caries risk assessment before doing a treatment and 22% of the undergraduates and 7% of the postgraduates don't. More number of postgraduates analysed the caries risk assessment**  
*Chi square test was done, p value is found to be statistically significant ( $p < 0.05$ )*



**Graph 4. Bar chart depicting level of study and if the dental students were aware that caries in the primary dentition is a strong predictor of caries in the permanent dentition hence caries risk assessment and therapeutic management of the disease is crucial, where 69% of the undergraduates and 19% of the post graduates were aware**  
*Chi square test was done, p value is found to be statistically significant ( $p < 0.05$ )*

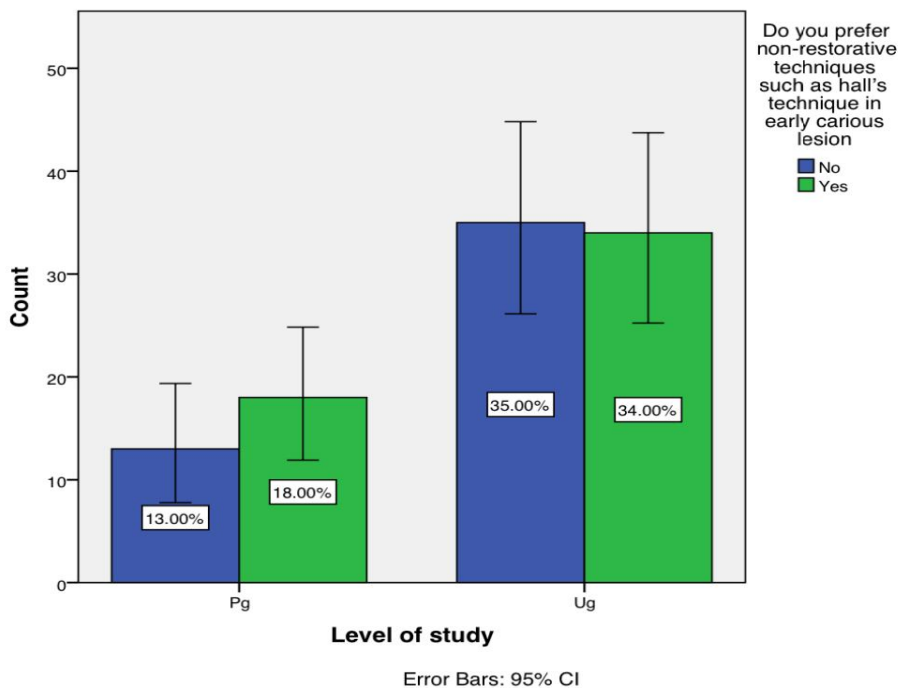


**Graph 5. Bar chart depicting the level of study and if the dental students interview with the parent or caregiver on caries risk assessment of the child, where 40% of the undergraduates and 20% of the postgraduates did not interview with the parent or caregiver on caries risk assessment of the child**  
*Chi square test was done, p value is found to be statistically significant ( $p < 0.05$ )*



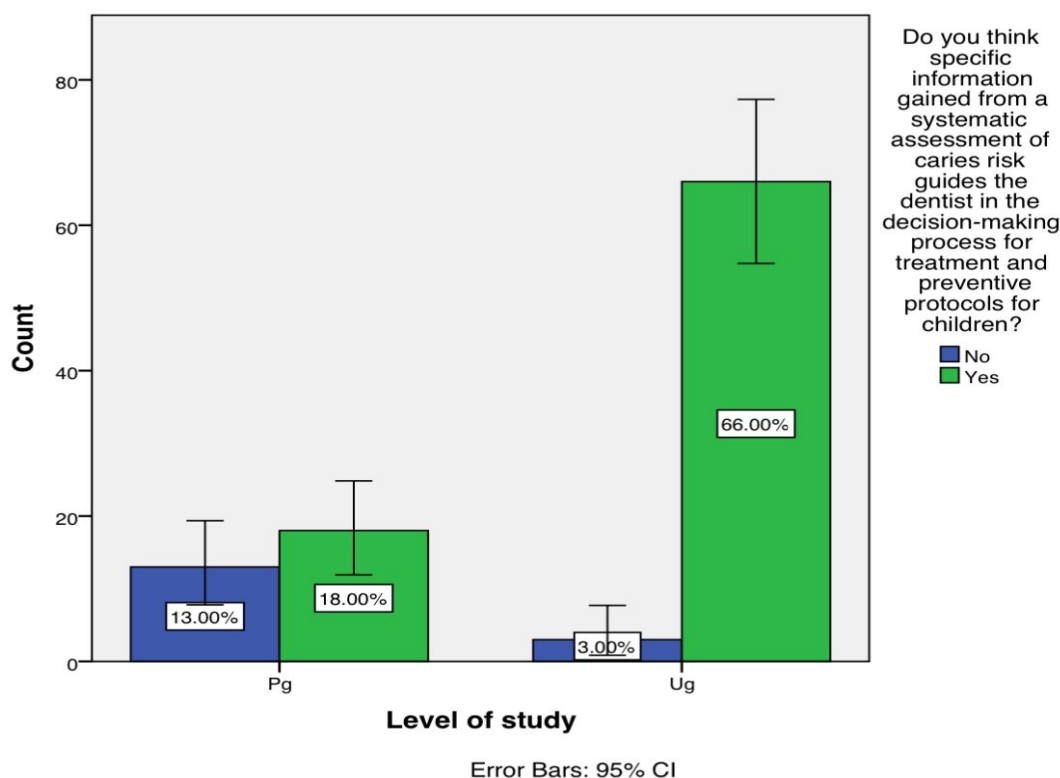
**Graph 6. Bar chart depicting the level of study and if the dental students recommend fluoridated toothpaste to their patients, where 55% of the undergraduates and 23% recommended fluoridated toothpaste to their patients**

*Chi square test was done, p value is found to be statistically significant ( $p < 0.05$ )*



**Graph 7. Bar chart depicting the level of study and if the dental students prefer hall's technique in early carious lesion, where 34% of the undergraduates and 18% of post graduates prefer non-restorative techniques such as hall's technique in early carious lesion, 35% of the undergraduates and 18% of the post graduates do not prefer non-restorative techniques such as hall's technique in early carious lesion**

*Chi square test was done, p value is found to be statistically significant ( $p < 0.05$ )*



**Graph 8. Bar chart depicting the level of study and if the dental students think specific information gained from a systematic assessment of caries risk guides the dentist in the decision- making process for treatment and preventive protocols for children, where 66% of the undergraduates and 18% of post graduates think specific information gained from a systematic assessment of caries risk guides the dentist in the decision- making process for treatment and preventive protocols for children**

*Chi square test was done, p value is found to be statistically significant ( $p < 0.05$ )*

In our study 69% of the undergraduates and 31% of the post graduates thought that the child must have his/her first dental visit as early as 12 months to 22 months.

Early signs of ECC can be seen soon after the first tooth emerges. Its advancement can be completely avoided if risk factors are identified early on and preventive oral health practises are applied.

For this reason, the American Academy of Pediatric Dentistry, and the American Academy of Pediatrics all have recommended that children should see a dentist by age 1 (or when the first tooth erupts) and that a dental home be established as soon as possible [30,11].

Caries in the primary dentition is a strong predictor of caries in the permanent dentition, hence caries risk assessment and therapeutic management are critical, according to our findings.

Majority of the students 55% of the undergraduates and 23% recommended fluoridated toothpaste to their patients. The ADA recommends that children categorized as high caries risk receive a full-mouth topical fluoride varnish (FV) application every three months [31,12].

Even if the kid lives in a community with fluoridated water, children with a moderate caries risk should receive FV every six months. Even if it was stated before in the appointment, the physician should emphasize the overall benefit of FV.

#### 4. CONCLUSION

It is concluded that in young children, general dentists play a significant role in avoiding and lowering the severity of ECC. General dentists can apply preventive and treatment protocols in their practise by employing an appropriate, age-specific caries risk assessment instrument to

estimate the caries risk of their children patients by embracing the concepts of the dental home and perinatal and infant oral health.

## LIMITATION

The main drawback of this study is limited sample size and confined to a single source for data. Further descriptive studies on a larger scale can help us to give comprehensive data for arriving at a conclusion and to plan health oral health programs for the population studied.

## DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

## CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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