KAP SURVEY ON SALIVARY DIAGNOSTIC METHODS OF CARIES RISK ASSESSMENT

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Abstract

OBJECTIVE: Caries risk assessment is a tooth to evaluate the risk factors that are responsible for the occurrence of dental caries. Saliva is readily available and has been recognized in the diagnostics and normal health surveillance.

MATERIALS AND METHODS: A convenient sample size of one hundred consecutive respondents participated in this study. A cross-sectional study was conducted using google forms and multiple-choice questions. The approval was obtained from the Institutional Ethics Committee. The questionnaire contained 12 questions based on the knowledge, awareness, attitude, and practice of dental interns and postgraduates towards salivary diagnostic methods for caries risk assessment.

RESULTS: Out of the total study population, 52% of the participants were aware of caries risk assessment and 64% thought caries risk assessment is needed. About 89% of the participants knew how saliva is used as a diagnostic tool.

CONCLUSION: More dental education programs have to be conducted to increase the awareness of salivary diagnostic aids for caries detection.

Keywords: Caries, Diagnosis tools, Innovative, Risk assessment, Saliva.

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INTRODUCTION:

Early diagnosis of diseases is crucial to prevent complications that could have a negative impact on a patient's quality of life. Despite the regular screenings and check-ups, many diseases go unnoticed till clinical signs and symptoms become apparent. (‘Saliva’, no date; Sridharan, 2019) To overcome these challenges, researchers are unraveling biomarkers (Glock, 1992) (Samotka et al., 2016). Dental caries has a multifactorial etiology, the risk of dental caries can be evaluated by analyzing and integrating several causative factors. These include caries experience, plaque, bacterial activity and social and behavioral factors. Hence prompt diagnosis and management become imperative. The Caries Risk Assessment Tool is a research-based tool used to identify the risk factors that cause dental decay. They generally have data to accurately quantitate disease susceptibility and allow for preventive measures (Muthukrishnan, 2021) (Website, no date).

Saliva, a biofluid, is totally non-invasive and readily available and has been recognized to address the roadblock pertaining to the more expensive alternatives (Karobari et al., 2021) (Ezhilarasan, 2020) Salivary diagnostic tests have lately come into the limelight, considering their efficiency and cost-effectiveness, as it can allow chair-side diagnosis of various oral diseases including dental caries. (Jessica, Jessica and Auerkari, 2019; ‘Saliva as a Diagnostic Tool in Orofacial Disorders’, 2020; Kart and Yarat, 2020) (Bhavikatti et al., 2021). Therefore, saliva can be seen in many cases as a reflection of the physiological function of the body and this makes it an excellent candidate for evaluating various biomarkers (Kushwaha et al., 2021) (‘Saliva’, no date) (Romera et al., 2018)

However, in dentistry, there still is a lack of screening tools to determine the risk of dental caries. (Maddu, 2019) Currently available screening models include a combination of various factors including diet, host, bacteria, fluoride exposure that interplay with a variety of social, cultural, and behavioral factors. (Deepa and Thirrunavukkarasu, 2010; Majid et al., 2014; Syed, 2020) (PradeepKumar et al., 2021) With the ability to detect caries in the early stages, prompt treatment can be provided. (Tsujimoto et al., 2021) Our team has extensive knowledge and research experience that has translate into high quality publications (Dinesh et al., 2013; Krishnan and Lakshmi, 2013; Muthukrishnan and

MATERIALS AND METHODS

STATISTICAL ANALYSIS:
THE DATA WAS CONVERTED TO SPSS VERSION 20.0 CATEGORICAL VARIABLES WERE EXPRESSED IN TERMS OF FREQUENCY, AND BAR GRAPHS WERE DISPLAYED. CHI-SQUARE TESTS WERE USED TO DETERMINE THE STATISTICAL SIGNIFICANCE OF THE CORRELATIONS.

RESULTS:
FIGURE 1 REPRESENTS THE PERCENTAGE OF PARTICIPANTS AWARE THAT SALIVA CAN BE USED AS A DIAGNOSTIC TOOL. OUT OF THE TOTAL STUDY POPULATION, 86% OF THE PARTICIPANTS WERE AWARE THAT SALIVA CAN BE USED AS A DIAGNOSTIC TOOL AND 14% OF THE PARTICIPANTS WERE NOT AWARE THAT SALIVA CAN BE USED AS A DIAGNOSTIC TOOL. BLUE REPRESENTS AWARE AND GREEN REPRESENTS NOT AWARE.

FIGURE 2 REPRESENTS THE PERCENTAGE OF PARTICIPANTS WHO WERE AWARE OF THE PREDOMINANTLY PREVALENT CARIES ASSOCIATED WITH MICROORGANISMS IN THE SALIVA. OUT OF THE TOTAL STUDY POPULATION, 49% THOUGHT THAT PREDOMINANT CARIES ASSOCIATED WITH MICROORGANISMS IN THE SALIVA WERE S.MUTANS AND S. SOBRINUS, 38% THOUGHT THAT PREDOMINANT CARIES ASSOCIATED MICROORGANISMS IN THE SALIVA WAS LACTOBACILLUS AND 13% THOUGHT THAT PREDOMINANT CARIES ASSOCIATED MICROORGANISM IN THE SALIVA WERE S.MUTANS AND S.AUREUS. WHITE REPRESENTS S.MUTANS AND S.SOBRINUS, RED REPRESENTS LACTOBACILLUS AND PURPLE REPRESENTS S.MUTANS AND S.AUREUS.

FIGURE 3 REPRESENTS THE PERCENTAGE OF PARTICIPANTS WHO THOUGHT NORMAL SALIVARY FLOW IS CRUCIAL FOR PROTECTION AGAINST DENTAL CARIES. OUT OF THE TOTAL STUDY POPULATION, 64% THOUGHT IT WAS CRUCIAL WHILE 36% DID NOT THINK IT WAS CRUCIAL. BLUE REPRESENTS NO AND GREEN REPRESENTS YES.


DISCUSSION:
OUT OF THE TOTAL STUDY POPULATION, 54% WERE MEN AND 46% WERE WOMEN. WHEN ASKED ABOUT THEIR AWARENESS OF WHETHER SALIVA CAN BE USED AS A DIAGNOSTIC TOOL, 86% OF THE PARTICIPANTS WERE AWARE OF THE USE OF SALIVA AS A DIAGNOSTIC TOOL AND 14% OF THE PARTICIPANTS WERE NOT AWARE OF THE USE OF SALIVA AS A DIAGNOSTIC TOOL. (R ET AL., 2020) WHENasked if saliva can be a host factor for dental caries, 81% of the participants said yes, saliva can be a host factor for dental caries while 19% said no, saliva cannot be a host factor for dental caries. (DEEPA AND THIRRANAVUKKARASU, 2010) WHEN ASKED IF THEY KNEW WHAT CARIES RISK ASSESSMENT WERE, 60% OF THE PARTICIPANTS KNEW WHAT CARIES RISK ASSESSMENT WERE AND 40% DID NOT KNOW WHAT CARIES RISK ASSESSMENT WAS. (CHATURVEDULA ET AL., 2021) WHEN ASKED IF THEY THOUGHT CARIES RISK ASSESSMENT WAS NEEDED, 64% OF THE PARTICIPANTS THOUGHT IT WAS NEEDED AND 34% OF THE PARTICIPANTS DID NOT THINK IT WAS NEEDED. (TENOVUO, 1989; MADDU, 2019) WHEN ASKED IF THEY KNEW ABOUT THE PRESENCE OF CARIES-ASSOCIATED MICROORGANISMS, 72% KNEW THE PRESENCE OF CARIES-ASSOCIATED MICROORGANISMS WHILE 28% DID NOT KNOW. (TSUJIMOTO ET AL., 2021) WHEN ASKED WHAT ARE THE PREDOMINANTLY PREVALENT CARIES-ASSOCIATED MICROORGANISMS IN THE SALIVA, 49%
of the participants answered S. mutans and S. sobrinus, 38% of the participants answered Lactobacillus and 13% answered S. mutans and S. aureus. (Maddu, 2019) When asked if they knew saliva can be used as a diagnostic tool, 85% of the participants said yes and 15% of the participants said no. (Priyadharsini, 2019) When asked if they think that a caries-free individual has higher or lower salivary pH, 64% of the participants thought a caries-free individual has higher salivary pH and 36% of the participants thought a caries-free individual has lower salivary pH. (Ushanthika et al., 2021) When asked if they knew what were the salivary biomarkers for caries risk assessment, 75% of the participants said they knew and 25% of the participants said they did not know. (Priyadharsini et al., 2018) When asked what are the salivary biomarkers for caries risk assessment, 86% of the participants said microbiota and pH while 14% of the participants said the amount of saliva. (Kanniah et al., 2020) When asked if they think normal salivary flow is crucial for protection against caries, 64% of the participants said they think normal salivary flow is crucial for protection against caries and 36% of the participants said they think normal salivary flow is not crucial for protection against caries. (Priyadharsini et al., 2018; Maheswari, Niveditha and Ramani, 2020)

CONCLUSION:
Salivary diagnostic methods are effective and play an important role in caries risk assessment. From this study, we conclude that there is an overall good awareness among dental interns and postgraduates on salivary diagnostic methods for caries risk assessment.

Author’s contribution:
Trisha Sasikumar – Contributed to conception, design, data acquisition and interpretation, drafted and critically revised the manuscript.
Dr. Sankeerthana Kolli – Contributed to conception, design, and critically revised the manuscript.
All authors gave final approval and agreed to be accountable for all aspects of the work.

Conflict of interest: The authors declare no conflict of interest.

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References:
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Figure 1

Figure 2

Figure 3

Bar graph 1
Bar graph 2