KNOWLEDGE, ATTITUDE AND PRACTICE OF DENTAL PRACTITIONERS TOWARDS SCREENING FOR ORAL PRE-CANCER AND CANCER.

Running Title: ***Screening Oral Pre-cancer and Cancer by Dental Practitioner***

ABSTRACT:

One of the global health issues is Oral cancer, which has an increased death rate. Awareness of oral cancer screening is important for oral health care professionals for early detection and improving the patients' survival rate. Attitude towards oral cancer awareness and knowledge of oral cancer screening are the key factors that impact oral cancer awareness success.

Materials and method: To assess the knowledge, attitude, and practice of dental practitioners and dental students towards screening for oral pre-cancer and cancer. This study included dental practitioners working in various academic institutions and private practitioners in Chennai. Participants were asked to fill in age, gender, designation, and experience. A structured questionnaire consisting of 10 questions, each having four options, was administered to the participants. The data collected was 100 responses analyzed by statistical package for the social science (spss inc., version 16 for, Chicago, IL, USA). Simple descriptive statistics were used to describe the distribution of data collected. T-test and ANOVA were employed to assess the statistically significant difference in the KAP scores between different groups.

Results: The response rate for the present study was 100%. 37% of general dental practitioners reported that they routinely do a thorough oral examination for all the patients,52% agree that they are adequately trained to examine patients for oral pre-cancer and cancer screening,8% of them reported that they never do toluidine blue staining for patients with oral lesion .majority(57) of them agree that they would recommend biopsy for suspected cases of oral

cancer .only 9% of the participants were aware of the time required for intraoral screening examination.31% of them were aware of the risk of malignant transformation in a white lesion.73% of the participants were aware of the occurrence of oral cancer in non - tobacco users was rare.53% of agree that thorough intraoral examination for oral cancer will reduce oral cancer mortality and morbidity.

KEYWORDS: oral cancer, pre-cancer, oral screening, attitude, knowledge.

INTRODUCTION:

The global well-recognized health problem is the cancer of the oral cavity and the pharynx, leading to a higher rate of mortality, especially in developing countries.(Natarajan E, Eisenberg E.,2011, Abdullah Jaber M.,2011, Oliveira JMB et al.,2013, Carter LM, Ogden GR.,2007)

Most studies have stated that heavy smoking and alcohol intake are important risk factors for oral cavity cancer (Znaor A et al.,2003). Most oral cancer in the early stages goes unnoticed due to asymptomatic nature of the disorder, and most of them are detected at the later stages. Even though recent advancements in managing oral cancer, it has a poor survival rate with an average of 5-year of 50% (Gómez I et al.,2010, Baykul T et al.,2010).

Early diagnosis of oral cancer is required to reduce the rate of morbidity and mortality, lower treatment costs, and better quality of life. To achieve this, health professionals, especially dentists, should perform oral cancer examinations as part of their clinical practice and be aware of the disease's pathogenesis and first clinical signs (Gómez I et al.,2010, Baykul T et al.,2010). Studies have reported a lack of sufficient knowledge and experience among professionals in diagnosing oral cancer in early stages (Nicotera G et al.,2004) Since there is no information regarding this issue among the dentist, the present study was conducted. Thus, the present study

aimed to assess general dental practitioners' knowledge, attitude, and practices about oral pre-cancer and cancer screening in Chennai.

MATERIALS AND METHODS:

The study included one hundred general dental practitioners in various academic institutions and private practitioners in Chennai city. Participants were asked to fill in age, gender, occupation, and experience. A structured questionnaire consisting of 10 questions (table 1), each with four options, was administered.

Statistical analysis

The data collected was analyzed by statistical package for the social science (spss inc., version 16 for Chicago, IL, USA). Simple descriptive statistics were used to describe the data distribution. T test and ANOVA were employed to assess the statistically significant difference in the KAP scores between different groups.

RESULTS:

The response rate of the study was 100%. 37% of general dental practitioners reported that they routinely do a thorough oral examination for all the patients.52% agree that they are adequately trained to examine patients for oral pre-cancer and cancer screening.8% of them reported that they never do toluidine blue staining for patients with oral lesion .majority(57) of them agree that they would recommend biopsy for suspected cases of oral cancer .only 9% of the participants were aware of time require for intraoral screening examination.31% of them were aware of the risk of malignant transformation in a white lesion.73% of the participants were aware of the

occurrence of oral cancer in non-tobacco uses was rare.53% of agree that thorough for intraoral examination for oral cancer will reduce oral cancer morbidity and mortality.

Since Attitude-based questions could not be used for scoring, we calculated the total score for each participant's knowledge-based questions.

We analyzed whether there is a statistically significant difference in the total score between different groups of participants.

There was no statistically significant difference in the mean score between groups divided based on occupation / based on experience.

Qualification, i.e., UG/PG was the only parameter that appeared to produce a statistically significant difference in the mean score (P=0.0001), implies that the 3 years of PG training and experience significantly enhances the clinical knowledge necessary for oral cancer screening.

DISCUSSION:

It is the duty of the dentist to diagnose oral cancer at the early stages to prevent local and distant metastasis. Hence, it is essential to ensure the formation of solid technical, scientific, and ethical knowledge to promote health for the prevention of prevalent oral lesions. Although post-graduation are essential for the activity in this field, graduation is essential and must ensure that dental students have the relevant basic knowledge on prevention and early diagnosis of oral cancer (Dib LL, Souza RS, Tortamano N.,2005).

In this study, about 89.7% reported that they used to examine the oral mucosa routinely, which is higher when compared with 81.9%, as reported by Soares TR, Carvalho ME, Pinto LS.,2014. The study by Applebaum E. et al. reports that 54% of physicians and 93% of dentists

performed an oral examination of patients older than 56 years, while for checking risk factors, although 96% of physicians asked their patients whether they smoked or drank alcohol, only 9% of physicians and 39% of dentists could correctly identify the two most common locations for the onset of oral cancer (Driemel O et al.,2007). According to Liu et al. the factors that influence the knowledge and practical components depend on the understanding of early detection of oral cancer in clinical practice (Epstein JB, Guneri P.,2009). This showed the need for health professional training in southern Colombia (Driemel O et al.,2007, Seoane Leston J, Diz Dios P.,2013).

The answers for adequate training of intraoral examination among the participants revealed that above 95% of them said that annual oral cancer examinations should be provided for 40 years of age and above; patients who were suspected of oral cancer should be referred to the concerned specialist. About 99.1% felt a need for additional training regarding oral cancer examination. Only 7.5% of the subjects responded that their knowledge regarding the prevention and detection of oral cancer is current and adequate.

For the experience of toluidine blue staining, our results are in accordance with the report of Epstein et al which shows that the toluidine blue retention test is a promising screening tool for high-risk oral precancerous lesions since it can reduce a large number of unnecessary biopsies (Epstein JB et al.,2008). Furthermore, concurring with other studies (Epstein JB, Guneri P.,2009, Guneri P et al., 2011) our results encourage consideration of TBLU as a viable and feasible screening method in high-prevalence and low-resource scenarios like India.

Though the oral cavity is accessible for clinical examination and oral cancer and premalignant lesions have well-defined clinical diagnostic features, oral cancers are detected in

their advanced stages. In fact, in India, 60%–80% of patients present with advanced disease compared to 40% in developed countries, which is consistent with patients presenting for medical care with more advanced disease in India compared with developed countries with alarmingly reduced overall survival (Oliveira JMB et al.,2013). I

For the detection of premalignant lesions, histopathological evaluation is of significant value. The current study suggests that histopathology may be helpful as a diagnostic tool in demonstrating a high degree of dysplasia. About 37% of general dental practitioners reported that they routinely do a thorough oral examination for all the patients.52% agree that they are adequately trained to examine patients for oral pre-cancer and cancer screening.8% of them reported that they never do toluidine blue staining for patients with the oral lesion, the majority (57%) of them agree that they would recommend biopsy for suspected cases of oral cancer.

Around 92.5% of professionals create awareness on the adverse effects of habits to their patients and help them to quit the habit, which is found to be higher than the other study with 82.1% conducted by Soares TR, Carvalho ME, Pinto LS.,2014.

According to the literature, the main risk factors are exposure to tobacco and excessive alcohol consumption (Epstein JB et al.,2008). At least three-quarters of cases of oral cancer can be prevented by eliminating risk factors such as tobacco and alcohol consumption. Hence, it is essential to educate people about quitting tobacco and alcohol.

About 43% of the subjects responded ventral surface of the tongue to be the highest site of malignant transformation. This is in accordance with the study done by Liu et al. (Uti OG, Fashina AA.,2006) were the tongue was the most common site for the malignant transformation. Consistent with the prevalence of chewing tobacco, studies have estimated that 58% of

worldwide head and neck cancers occur alone in South and Southeast Asia (Epstein JB et al.,2008). The incidence rates of cancers of the head and neck in both males and females in nearly all urban cancer registries of South Asia are among the highest in the world (Epstein JB et al.,2008). On the other hand, it is much lower in western countries where tobacco chewing habits are not common (Epstein JB et al.,2008, Epstein JB, Guneri P.,2009).

The Qualification of the professionals determines the knowledge percentage, and practical application of that knowledge was better among Postgraduates higher than reported by other studies. (Honarmand M, Hajihosseini A, Akbari F.,2014).

Smoking and alchohol were reported as risk factors by 63.5%, which is >92.4%, 94%, and 79.2%, respectively, reported by other authors (Soares TR, Carvalho ME, Pinto LS.,2014, Carter LM, Ogden GR.,2007, Uti OG, Fashina AA.,2006). In our study, the knowledge of age as a risk factor of oral cancer was 46%, which indicates that educating the etiopathogenesis of oral cancer has to be emphasized for undergraduate dental students.

In the present study, 97.1% of the subjects responded correctly to squamous cell carcinoma as the most common oral cancer, higher than 48.1% as reported in a study conducted by Soares TR, Carvalho ME, Pinto LS.,2014.

The responses revealed that above 95% of them reported that annual oral cancer examinations should be provided for those people of 40 years of age and above. Patients suspected of having oral cancer lesions should be referred to a specialist as it improves the survival rate of patients. About 99.1% felt that there is a need for additional training regarding oral cancer. Only 7.5% of the subjects responded that their knowledge regarding the prevention and detection of oral cancer is current and adequate.

According to the practices, 89.7% reported that they used to routinely examine the oral mucosa, which is higher than 81.9%, as reported by Soares TR, Carvalho ME, Pinto LS.,2014 98.1% reported that patients with suspicious lesions were to an oral surgeon for further evaluation.

About 92.5% of the subjects educate their patients on the side effects of alcohol and tobacco and assist them in quitting the habit, which is higher than 82.1% as reported in studies conducted by Soares TR, Carvalho ME, Pinto LS.,2014. According to the literature, the main risk factors are exposure to tobacco and excessive alcohol consumption (Epstein JB et al.,2008). At least three-quarters of oral cancer could be prevented by eliminating risk factors such as tobacco and alcohol. Thus, it is important to educate people regarding the adverse effects of the intake of alcohol and tobacco since not doing so may be deemed a negligent omission. The limitation of this study is that it is based on a self-administered questionnaire which may lead to over and under reporting, however, according to a study (Gilbert GH, Rose JS, Shelton BJ.,2002) this method is sufficiently valid for the most important research questions. In our study, Qualification, i.e., UG/PG, was the only parameter that appeared to produce a statistically significant difference in the mean score (P=0.0001), implying that the three years of PG training and experience significantly enhance clinical knowledge necessary for oral cancer screening.

CONCLUSION:

This study highlights the importance of oral examination in diagnosing oral pre-cancer and cancer and its awareness among dental practitioners and dental students. However, Qualification as undergraduates or postgraduates was the only parameter that significantly enhanced the knowledge component. Thus, more awareness for screening of oral cancer has to

be brought among the undergraduate level by conducting CDE programs, camps, and knowledge about the latest oral screening methods.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. 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.

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TABLES:

Table 1: Questions

S.no	Questions
1	Do you perform a thorough intra oral examination of patients reporting to you for dental treatment?
2	Do you feel that you are adequately trained to examine patients for oral pre-cancer and cancer?
3	What is your experience with toluidine blue staining for oral pre-cancer?
4	In your opinion, what is the age group at high risk of developing oral pre-cancer and cancer?
5	In clinically suspected cases of oral cancer, what would you do?
6	What do you think is the time required to perform a thorough intraoral examination?
7	Which of the following characteristic in a white lesion increases its risk of malignant

	transformation?
8	What are the high risks sites for malignant transformation in the oral cavity?
9	Is it possible for a person with no history of tobacco use to develop oral cancer?
10	In your opinion, what is the effect of a through intra oral screening examinations for oral cancers?

Table 2: The difference in the mean total scores among BDS and MDS (T-test)

Group Statistics					
	Qualification	**N**	**Mean**	**Std. Deviation**	**P Value**
Total_sum	**BDS**	44	2.5000	1.21042	
	MDS	56	3.8036	1.16650	<0.0001

Table 3: The difference in the mean total scores based on occupation using one way ANOVA test and post hoc comparison using Tukey HSD

Occupation	**N**	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**P-value**
					Lower Bound	Upper Bound	
Private	8	2.0000	.00000	.00000	2.0000	2.0000	<0.0001

Academics	40	2.7000	1.32433	.20939	2.2765	3.1235	
Both	52	3.8269	1.16688	.16182	3.5021	4.1518	
Total	100	3.2300	1.34731	.13473	2.9627	3.4973	

Post hoc-Tukey HSD

(OCCUPATION)		**Std. Error**	**Sig.**	**95% Confidence Interval**	
				Lower Bound	**Upper Bound**
Private	Academics	0.46169	0.288	-1.7989	.3989
	Both	0.45272	0.000	-2.9045	-.7493
Academics	Private	0.46169	0.288	-.3989	1.7989
	Both	0.25071	0.000	-1.7237	-.5302
Both	Private	0.45272	0.000	.7493	2.9045
	Academics	0.25071	0.000	.5302	1.7237

Table 4: The difference in the mean total scores based on experience using one way ANOVA test and post hoc comparison using Tukey HSD

Total sum

Experience	**N**	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**P-value**
					Lower Bound	**Upper Bound**	

<5 years	70	3.1143	1.42994	.17091	2.7733	3.4552	0.019
5-10 yrs	22	3.8636	1.03719	.22113	3.4038	4.3235	
> 10 yrs	8	2.5000	.53452	.18898	2.0531	2.9469	
Total	100	3.2300	1.34731	.13473	2.9627	3.4973	

Tukey HSD

EXPERIENCE (yrs)		**Std. Error**	**Sig.**	**95% Confidence Interval**	
				Lower Bound	**Upper Bound**
<5	**5-10**	**.31943**	**.054**	**-1.5097**	**.0110**
	>10	**.48775**	**.422**	**-.5467**	**1.7752**
5-10	**<5**	**.31943**	**.054**	**-.0110**	**1.5097**
	>0	**.53957**	**.035**	**.0793**	**2.6479**
>10	**<5**	**.48775**	**.422**	**-1.7752**	**.5467**
	5-10	**.53957**	**.035**	**-2.6479**	**-.0793**

Table 5: The difference in the mean total scores based on age using one way ANOVA test and post hoc comparison using Tukey HSD

Age (years)	**N**	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**P Value**
					Lower Bound	**Upper Bound**	
25-35	64	3.0938	1.49835	.18729	2.7195	3.4680	0.37

36-45	22	3.5455	1.01076	.21550	3.0973	3.9936	
>45	14	3.3571	1.00821	.26945	2.7750	3.9393	
Total	100	3.2300	1.34731	.13473	2.9627	3.4973	

Table 6: Distribution of responses for the attitude questionnaire (descriptives)

Question	**Responses**			
Do you perform a thorough oral examination of patients reporting to you for dental treatment	Yes, routinely in all patients	Yes, only in patients with a history of tobacco use	Yes, if the patient is symptomatic	No
	87%	8%	5%	0
Do you feel that you are adequately trained to examine patients for oral pre-cancer and cancer	Yes	No	Not sure	Not necessary
	52%	25%	23%	0
What is your experience with toluidine blue staining for oral cancer	Never	Rarely	Not sure	Only if alcoholic
	8%	48%	8%	36%