Dentists play a vital role in early recognition of Tobacco-related Oral Mucosal Diseases. Tobacco Pouch keratosis (TPK)/ also called as Smokeless tobacco induced keratosis, is one the most alarming disease of existing time. Tobacco pouch keratosis or smokeless tobacco-induced keratosis appears as of a gray/white/yellowish brown mucosal lesion in the area of tobacco contact especially the muco-buccal fold/Mucosa.

The purpose of this study was to evaluate Prevalence of Tobacco Pouch Keratosis of Bhavnagar population. Methodology: Total 100 participants with a history of smokeless tobacco use and lesions in the muco-buccal fold were included in the study. The age, sex, location and the clinical diagnosis of the lesion were recorded.

Result: Among 100 cases reviewed, 72% of cases were seen in males. The Maximum number of participants were in age group of 21-30 years (32%). Mawa(54%) is the most common habit found amongst the participants. Maximum number of Participants were found having stage 2 as per the new Proposed Clinical Classification by Pranay Patel & Ruchita Peter et al. The Mandible Vestibular/Buccal Mucosa was the most common location for involvement of the lesion (56%). The most commonly associated lesion along with Tobacco pouch keratosis was found to be Oral Submucous Fibrosis(OSMF) (10%). Conclusion: Smokeless Tobacco habits(SLT) are trending too fast in modern cohort. Tobacco Pouch Keratosis is one kind of Oral Potentially malignant disorders(OPMDs) & it is prone for malignant transformation. Such kind of lesions should not be ignored and the patient as well as the society has to be educated about the harmful effects & consequence. Till date very few Classifications/Staging’s are existing related to tobacco pouch Keratosis. So here with this study we try to Proposed our new classification of tobacco pouch Keratosis by Pranay Patel & Ruchita Peter et al for easy clinical diagnosis and treatment.

Keywords: Tobacco Pouch Keratosis, Oral Potentially Malignant Disorders, Smokeless Tobacco Habits.
INTRODUCTION:
Disease is essentially an individual problem and affliction is probably a result of genetic makeup and environmental influence. Tobacco is the enemy of the Earth. Various types of Harmful Tobacco products in one or the other forms are consumed by the community of all age group all over the globe nowadays. According to the recent Government of India’s National Sample survey data, there are 184 million tobacco consumers in India. About 40% of them use smokeless tobacco. Smokeless tobacco (SLT) use includes pan masala and chewing of tobacco in different forms. In addition to chewing tobacco leaves, other forms of smokeless tobacco are Mawa, gutkha, Betel Quid, Khaini, Mishri, Zarda etc used in India and other countries. Betel quid used in South Asia often contains smokeless tobacco. Mawa is the most abundantly consumed SLT form in Bhavnagar city of Gujarat state in India which consist of Tobacco+Lime+Areca Nut.

Many Oral Premalignant Lesions/ Conditions/ Oral Potentially malignant disorders (OPMDs) are associated with such kind of Harmful Oral habits. Various conditions affect oral mucosal health and are acquired generally by lifestyle practices and harmful oral habits and one such is Tobacco Pouch Keratosis. Tobacco Pouch keratosis (TPK) is one the most alarming disease of existing time. Tobacco pouch keratosis or smokeless tobacco-induced keratosis appears as of a gray/white/yellowish brown mucosal lesion in the area of tobacco contact especially the muco-buccal fold. The lesion is strictly associated with habitual chewing or snuff dipping tobacco. Since the lesion is associated with the SLT and areca nut chewing habit, many other OPMDs lesions can be seen alongside like Oral Submucous fibrosis & Oral Leukoplakia etc.

Dentists play a vital role in early recognition of Tobacco-related Oral Mucosal Diseases. After going through various databases, till date very few Clinical Classification/Staging’s exist related to tobacco pouch Keratosis. So here with this study we tried to Proposed our new Clinical classification of Tobacco Pouch Keratosis by Pranay Patel & Ruchita Peter et al for easy clinical diagnosis and treatment. Prevention and early diagnosis is crucial not only in conditions which are incurable but also in conditions which are difficult to treat once they progress. The purpose of this study was to evaluate Prevalence of Tobacco Pouch Keratosis of Bhavnagar population.

OBJECTIVES:
To evaluate the Prevalence of Tobacco Pouch Keratosis according to Age, Gender, different forms of tobacco habits, Clinical Appearance, Location & Association with other Oral Mucosal Diseases.

MATERIALS AND METHODS:
The present study was conducted in Dept. of Oral Medicine & Radiology, College of Dental Science and Hospital, Amargadh, Bhavnagar, Gujarat, India. Permission for the study was obtained from Institutional Ethics Committee. The Source of data was patient coming to OPD in Department of Oral Medicine and Radiology. A total of 500 participants who visited College of Dental Science & Hospital, Amargadh for various oral complaints over a period of 04 months were interviewed and clinically examined for Oral Mucosal Lesion. Voluntary participants above 20 years who were clinically diagnosed of having TPK lesions associated with SLT and areca-nut habit were included in the study. Participants who were too ill, insane or lunatic & refused to give consent were excluded from the study. Out of 500 examined participants only 100 participants with a history of smokeless tobacco use and lesions in the Muco-buccal fold/mucosa were included in the study. Each Participant was interviewed. Structured questions related to vital statistics, Education, Oral health related complaints, Medical history, detail history of habits especially related to Tobacco and Areca nut consumption etc. was asked to each participant and the outcome for the same was recorded in the Specially Designed Proforma. A standardized intra oral examination was performed with diagnostic instruments & necessary aseptic precautions by two MDS specialist. The following areas had been examined sequentially in detail – Muco- Buccal fold/Buccal and Vestibular mucosa, Lips, Hard and Soft palate, Tongue, Floor of mouth, Oro- pharynx etc.
The clinical diagnosis of the lesion was recorded as per the Classification of Pranay Patel & Ruchita Peter et al (Table No.1). All the findings were entered in the Master chart and Statistical analysis was conducted.

**Table No. 1: Proposed New Clinical Classification of Tobacco Pouch Keratosis**  
*by Pranay Patel & Ruchita Peter et al (2020)*

<table>
<thead>
<tr>
<th>Stage</th>
<th>Soft tissue changes:</th>
<th>Hard tissue changes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>- A soft velvety Gray/white/Yellowish Brown/ translucent, Fissured/Wrinkled appearance of the Mucosa at the Site of placement.</td>
<td>- Initial Stains on the Bucaal/Facial surface &amp; Cervical Area of the tooth.</td>
</tr>
</tbody>
</table>
| Stage 2 | - A thin Gray/white/ Yellowish Brown plaque type, Fissured/Wrinkled appearance of the Mucosa at the Site of placement  
- Gingival Recession. | |
| Stage 3 | - A thick white/ Yellowish Brown plaque type lesion with Fissured/Wrinkled appearance of the Mucosa at the Site of placement with or without Mild peripheral Erythema  
- Gingival Recession & loss of attachment. | |
| Stage 4 (I) | - Grade II/III Mobility of the involved teeth.  
- Severe Stains on all surfaces of the tooth,  
- Root caries evident  
- Cervical Abrasion & Attrition | - All of the Above as Stage 3. |
| Stage 4 (II) | Tobacco Pouch Keratosis Associated with other Oral Potentially Malignant disorders like Oral Submucous Fibrosis, Oral Leukoplakia etc. |
| Stage 4 (III) | Tobacco Pouch Keratosis Associated with Oral Malignancy. |

*Figure No.1: Showing Different Clinical Forms/Appearances Of Tobacco Pouch Keratosis*
RESULT & OBSERVATION:
The total number of participants included in the present study were hundred. Among 100 cases reviewed, 72% of cases were seen in males. (Graph No. 01)

**Graph no. 01: gender wise distribution of participants:**

Out of 100 participants in the Study group, 32 participants were in the age group of 21-30 years, 26 participants were in the age group of 31-40 years, 21 participants were in the age group of 41-50 years, 13 participants were in the age group of 51-60 years, 06 participants were in the age group of 61-70 years, 02 participants were in the age group > 70 years. The Maximum number of participants were in age group of 21-30 years(32%) & only minimum were there in age group above 70 years(2%). (GRAPH NO. 02).

**Graph no. 02: age group wise distribution of participants:**

Amongst the 100 participants, Mawa was the most common habit found amongst the participants; 54 participants were having Mawa habit, followed by Paan in 9 participants; Areca nut in 15 participants, other habits like Gutka and Tobacco chewing in 22 participants. (GRAPH NO. 03)
Out of total 100 participants, Stage 1 TPK lesion was seen in 24 participants, Stage 2 in 25 participants, Stage 3 in 20 participants, Stage 4(I) in 07 participants, Stage 4(II) in 22 participants & Stage 4(III) in 2 participants. (GRAPH NO. 04).

From Graph No. 04, it was distinctly observed that maximum number of participants had Stage 2 Tobacco pouch Keratosis as per the Proposed Classification by Pranay Patel & Ruchita Peter et al. The Mandibular Posterior Vestibular/Buccal Mucosa was the most common location for involvement of the lesion (56%) followed by Mandibular Anterior region (28%), Maxillary Posterior Vestibular/Buccal Mucosa (10%), Maxillary Anterior Vestibular/Buccal Mucosa (5%) & One participants in Floor of mouth.(GRAPH NO. 05).
Graph no. 05: frequency of site of involvement:

**FREQUENCY OF SITE OF INVOLVEMENT**

<table>
<thead>
<tr>
<th>Site</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior Maxilla Vestibular/Buccal Mucosa</td>
<td>5</td>
</tr>
<tr>
<td>Anterior Mandible Vestibular/Buccal Mucosa</td>
<td>10</td>
</tr>
<tr>
<td>Posterior Anterior Maxilla Vestibular/Buccal Mucosa</td>
<td>28</td>
</tr>
<tr>
<td>Posterior Mandible Vestibular/Buccal Mucosa</td>
<td>56</td>
</tr>
<tr>
<td>Other oral Mucosa Other region</td>
<td>1</td>
</tr>
</tbody>
</table>

Out of Total 100 participants, 76 participants had No lesions except Tobacco pouch Keratosis, 10 participants had OSMF, 10 having Oral Leukoplakia as along with TPK, 02 participants had Oral Malignancy along with TPK and 02 participants had other OPMDs. From current study, it was observed that majority of the participants had only Tobacco pouch keratosis and No other oral lesions.

**DISCUSSION:**
Smokeless Tobacco habits (SLT) is the new trend of the existing generation. It is associated with elevated levels of morbidity and mortality all over the earth. Five million persons breathe their last breath from tobacco related diseases every year in the world, particularly in developing countries like India. Tobacco pouch Keratosis is one of the premalignant lesions associated with SLT & its early diagnosis & Treatment will reduce its transformation into Oral Malignancy.

The Present study comprised of 100 clinically diagnosed cases of Tobacco pouch keratosis. In the present study, all the participants were between the age ranges of 21-72 years. The maximum number of participants was in the age group of 21-30 years. The use of smokeless tobacco appears to be finding its way onto middle school, high school and college campuses as a socially acceptable and popular habit. This can be a probable reason for its occurrence in younger age group and our findings co-relate with the findings of Greer Ro Jr et al.⁹

In the present study, the number of Male participants (72%) outnumbered the Female participants (28%). SLT habit is socially accepted and vastly popular habit that reflects a masculine image of a person which also explains high male predominance. It has been proved that the smokeless tobacco habit is more prevalent in Males than females in Bhavnagar population in this study and is in accordance with the other studies conducted by Jaber et al, Rani et al, Saraswathi et al.¹¹

Both Smoking and Smokeless form of tobacco habits are practiced too much in India & South East Asia Regions.¹²,³ In our study, it was observed that SLT in the form of Mawa (54%) was the most common habit amongst the participants. Along with that it was also concluded that various other smokeless forms; for eg. Paan, Gutkha, Plain Areca nut, Betel Quid are responsible for the occurrence of TPK and other associated OPMDs. The reasons for having Mawa chewing as the prevalent habit in our study, may be because of our dental hospital is located in rural area. This finding was consistent with the findings of chitroda et al, Mehta et al, Safia Ali Al-Attas et al, Greer Ro Jr et al.¹,³,⁴,¹¹

Till today there are very few and acceptable clinical classification available for the Tobacco pouch Keratosis / Smokeless Tobacco Induced Keratosis
present. So in this Article we tried to Proposed our new Clinical Classification of Tobacco pouch Keratosis by Pranay Patel & Ruchita Peter et al.(TABLE NO.1) As per the current classification we found that maximum number of participants had Stage 2 Tobacco pouch Keratosis and were in curable situation, if they were treated properly.

Apart from Tobacco pouch Keratosis, SLT habits can also cause different types of other Oral OPMDs like Oral Leukoplasia, OSMF, Oral Lichenoid reactions, Oral Malignancy etc. In the present study we did observe lesions like; Oral Leukoplasia, OSMF, Oral Lichenoid reactions and Oral Malignancy. After going through various databases, we did not come across this type of observation in any of the studies. It is significant to note here that, the detailed examination of oral mucosa is must in patients having Smokeless Tobacco and Areca-nut related habits. This will assist in diagnosis of the hidden and suspicious lesions.

In present study it showed that the Mandibular Posterior Vestibular/Buccal Mucosa was the most common location for involvement of the lesion (56%) followed by Mandibular Anterior region (28%). After going through various databases very few cases had been reported with the TPK lesions reported in the Maxillary region. Our study had involvement of Maxillary Posterior Vestibular/Buccal Mucosa 10% of participants & Maxillary Anterior Vestibular/Buccal Mucosa (5%).

**The Strength & Limitation of study:** The proposed New clinical classification of TPK by Pranay Patel & Ruchita Peter et al will be helpful in grading & diagnosing the disease at the earliest level. Few more studies should be conducted on a large population as our study was having less number of participants.

**CONCLUSION:**

Smokeless Tobacco habits are trending too fast in modern cohort. Tobacco Pouch Keratosis is one kind of Oral Potentially malignant disorders & it is prone for malignant transformation. After going through various databases, till date very few Classifications/Staging are existing related to tobacco pouch Keratosis. So here with this study we tried to Proposed our new Clinical classification of tobacco pouch Keratosis by Pranay Patel & Ruchita Peter et al for easy clinical diagnosis and treatment. Such kind of lesions should not be ignored and the patient as well as the society has to be educated about the harmful effects & consequence of such habits and preventive measures can be taught for a healthier quality of life.

**CONFLICTS OF INTEREST:** There are no conflicts of interest.

**ACKNOWLEDGEMENT:** Nil.

**REFERENCES:**


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