A cross-sectional prevalence study: To assess the prevalence and site distribution of oral mucosal lesions

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Abstract

Introduction: Early diagnosis is the key in the prevention of transformation of oral mucosal lesions into life threatening disease “CANCER”, hence the need of the study determines the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur.

Methods: A cross-sectional prevalence study was carried out to assess the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur. The sample size was estimated to be 150. A single examiner previously trained for the diagnosis of Oral Mucosal lesions made all examinations. The data was collected using the WHO oral health assessment form 2013. The data analysis was done using the SPSS version 20.

Result: The results stated a strong association between age, chewing tobacco smoking and oral lesions.

Conclusion: The present study concludes a positive relation between intake of tobacco in any form with oral mucosal lesions hence an additional effort to educate the masses about the hazardous effects of tobacco should be a priority for both governmental and non-governmental agencies.

Keywords: Oral mucosal lesions, tobacco, oral cancer, early diagnosis

Introduction

The health of the oral mucosa is directly related to the general health of the human beings. The oral mucosa performs various different functions like protection, sensation and secretion [1]. The health of the oral cavity also plays an important role in the general health of the human beings [2]. The oral mucous membrane effectively serves as a protective barrier against trauma, pathogens, as well as cancer causing agents [3]. Oral mucosal lesions are usually known as any abnormal modification in the color, surface aspects, swelling, or loss of solidarity of the oral mucosal surface. Even though a bigger proportion of OMLs are usually benign and do not require any emergency or active treatment, there might be cases present demonstrating significant pathology, among these with particular importance are oral potentially malignant disorders which have a greater chance to progress into a malignancy [4]. Disruption of the oral health negatively affects a number of important physiologic processes such as speech, chewing and swallowing and it also deteriorates social contacts [5]. Oral mucosal lesions are now commonly seen in many populations around the world. The epidemiological studies of oral mucosal lesions are still fewer when compared with studies regarding dental caries or periodontal diseases [6]. In India, the consumption of tobacco is responsible for more than half of all the oral mucosal lesions in men and more than one-fourth of oral mucosal lesions in women. The World Health Organization predicts that deaths due to consumption of tobacco in India may exceed 1.5 million annually by 2020. The incidence of oral mucosal lesions of the oral cavity is maximizing because of the increase in intake of smokeless as well as smoking of tobacco [7]. The use of tobacco in India differs from that of the globe. The most widely used form of tobacco globally is in the form of a cigarette, however, in India, merely 20% of the tobacco consumed is in the form of a cigarette, whereas 40% is consumed as bidi, and the rest in the form of smokeless/chewable tobacco.
The use of tobacco in India is influenced by various different factors such as persons attitude, the exposed stress, extensive workload, easy availability, widespread advertising of tobacco brands with different products and a dearth of awareness spreading campaigns [1]. There might be many other reasons other than tobacco which may cause oral mucosal lesions such as bacterial, viral or fungal infections, traumatic injuries, systemic diseases and even excessive consumption of betel nut and alcohol [2].

Early diagnosis is the key in the prevention of transformation of oral mucosal lesions into life threatening disease ‘Cancer’, hence the need of the study determines the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur. A single examiner previously trained for the diagnosis of Oral Mucosal lesions made all examinations. The aim of this study was to attain a strategically standard approach based on the guidelines presented by the World Health Organization for the collection and report of data about the oral mucosal lesions.

Materials and Method
A cross-sectional prevalence study was carried out to assess the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur. The patients attending outpatient department of Shivam Dental Clinic, Lakhimpur from 15th of September 2019 to 22nd of February 2020 were included in the study. Patients who were more than 10 years of age and patients who were less than 60 years of age were included in the study. The sample size was calculated using the formula: N= Z2 P (1-P)/D2 and was estimated to be 150 based on the empirical sample size obtained from previous literature. Verbal consent was taken from the patients visiting the outdoor patient department of Shivam Dental Clinic, Lakhimpur. Inclusion Criteria (1). Patients attending outdoor patient department of Shivam Dental Clinic, Lakhimpur. (2) Patients of both genders were included. (3) Patients with age more than 10 years and less than 60 years were included. Exclusion Criteria (1) Patients who were not willing to participate in the study. (2) Patients with systemic disorders. (3) Patients who were less than 10 years and more than 60 years of age. A single examiner previously trained for the diagnosis of Oral Mucosal lesions made all examinations. The examiner was calibrated priorly to ensure uniform interpretation of the data and reliability. Duplicate examinations were conducted for the 5% of the sample at the beginning, about half way through the survey, and again at the end of the survey to ensure the reliability of the examiner. The data was collected using the WHO oral health assessment form 2013. The oral health surveys provide a concrete basis for assessing the present oral health status of a given population and simultaneously helps to determine the basic needs for oral health care for oral mucosal diseases. The guidelines presented in the WHO oral health assessment form 2013 have been elaborated for practical and economical sample designs suitable for recording the prevalence of oral diseases required for strategic planning and establishment of oral health programmes World Health Organization’s Guide to epidemiology and Diagnosis of Oral Mucosal diseases was used as the diagnostic criteria. All patients were examined while seated on a dental chair using artificial light. Two mouth mirrors were used to retract the tongue and the cheeks. Cotton swabs were used during the examination for removing debris and examining whether white lesions could be wiped off or not. The statistical test Pearson’s Chi-Square was used to test the significance of the prevalence of the oral mucosal lesions in association with age, gender, and tobacco intake habits. The data analysis was done using the SPSS version 20.

Result
The present study aimed to attain a strategically standard approach based on the guidelines presented by the World Health Organization for the collection and report of data about the oral mucosal lesions. A total of 150 study participants were included in the study. Chi square test was applied for independent association of variables.

There was no association between age & location of lesion

P value 0.441

0.441>0.05 non-significant

There was no association between gender & smoking

P value 0.125

0.125>0.05 non significance

There was an association between age & smoking

P value 0.037

0.037<0.05 significant

There was an association between age & chewing tobacco

P value 0.000

0.00<0.05 significant

There was an association between lesion & gender

P value 0.014

0.014<0.05 significant

There was an association between age & lesion

P value 0.000

0.00<0.05 significant

There was an association between age n chewing tobacco

P value 0.000

0.00<0.05 significant

Table 1: Frequency Percent Valid percent

| Valid | Frequency | Percent | Valid percent |
|-------|-----------|---------|---------------|
| 20-30 | 61        | 40.7    | 40.7          |
| 31-40 | 47        | 31.3    | 31.3          |
| 41-50 | 32        | 21.3    | 21.3          |
| 51-60 | 10        | 6.7     | 6.7           |
| Total | 150       | 100.0   | 100.0         |

Table 2: Location * age groups cross tabulation count

| Age groups          | Total |
|---------------------|-------|
|                     |       |
| Location            | BM    | Tongue |
|                     | 31-40 | 41-50  | 51-60  | Total |
| BM                  | 11    | 14.5%  | 5.16%  | 30.96% |
| Tongue              | 13.22%| 0      | 0      | 13.22% |
| Total               | 12.38%| 14.45% | 5.33%  | 31.100% |
Table 3: Chi-square tests

|                    | Value | df | Asymp. sig. (2-sided) |
|--------------------|-------|----|-----------------------|
| Pearson Chi-Square | 1.636 | 2  | .441                  |
| Likelihood Ratio   | 1.951 | 2  | .377                  |
| Linear-by-Linear Association | 1.205 | 1  | .272                  |
| N of Valid Cases   | 31    |    |                       |

*P* value 0.441, 0.441>0.05 = non-significant, There is no association between age & location of lesion.

Table 4: Smoking * gender crosstabulation count

| Gender | Male | Female | Total |
|--------|------|--------|-------|
| Smoking|      |        |       |
| Non smokers | 32 21.33% | 11 7.33% | 43 28.66% |
| smokers | 91 60.66% | 16 10.66% | 107 71.33% |
| Total   | 123 100% | 27 100% | 150 100% |

Table 5: Chi-square tests

|                    | Value | df | Asymp. sig. (2-sided) | Exact sig. (2-sided) | Exact sig. (1-sided) |
|--------------------|-------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | 2.347 | 1  | .125                  |                      |                      |
| Continuity Correction| 1.683 | 1  | .195                  |                      |                      |
| Likelihood Ratio   | 2.230 | 1  | .135                  |                      |                      |
| Fisher's Exact Test|       |    | .158                  | .099                 |                      |
| Linear-by-Linear Association | 2.332 | 1  | .127                  |                      |                      |
| N of Valid Cases   | 150   |    |                       |                      |                      |

0.125 *p* value, 0.125>0.05 no significance, No association between gender & smoking.

Table 6: Crosstab count

| Age groups | 20-30 | 31-40 | 41-50 | 51-60 | Total |
|------------|-------|-------|-------|-------|-------|
| Smoking    |       |       |       |       |       |
| Non smokers| 22 14.66% | 16 10.66% | 3 2% | 2 1.3% | 43 28.66% |
| Smokers    | 39 6%  | 21 6%  | 19 3.3% | 5 3.3% | 107 71.33% |
| Total      | 61 40.66% | 47 31.3% | 32 21.3% | 10 6.66% | 150 100% |

Table 7: Chi-square tests

|                    | Value | df | Asymp. sig. (2-sided) |
|--------------------|-------|----|-----------------------|
| Pearson Chi-Square | 8.489 | 3  | .037                  |
| Likelihood Ratio   | 9.775 | 3  | .021                  |
| Linear-by-Linear Association | 5.657 | 1  | .017                  |
| N of Valid Cases   | 150   |    |                       |

0.037<0.05 significant, Association between age & smoking.

Table 8: Crosstab count

| Chewing tobacco | Total |
|-----------------|-------|
| Non chewers     |       |
| 20-30 29 19.33% | 32 21.33% | 61 40.66% |
| 31-40 5 3.33%  | 42 28%  | 47 31.33% |
| 41-50 8 5.33%  | 24 16%  | 32 21.33% |
| 51-60 5 3.33%  | 10 6.66% |       |
| Total           | 47 31.3% | 103 68.66% | 150 100% |

Table 9: Chi-square tests

|                    | Value | df | Asymp. sig. (2-sided) |
|--------------------|-------|----|-----------------------|
| Pearson Chi-Square | 19.019 | 3  | .000                  |
| Likelihood Ratio   | 20.399 | 3  | .000                  |
| Linear-by-Linear Association | 2.332 | 1  | .127                  |
| N of Valid Cases   | 150   |    |                       |

*P* value 0.000, 0.000<0.05, Association between age & chewing tobacco.

Table 10: Crosstab count

| Chewing tobacco | Total |
|-----------------|-------|
| Non chewers     |       |
| Male 36 24%     | 87 58% | 123 82% |
| Female 11 7.3%  | 16 10.6% | 27 18% |
| Total           | 47 31.3% | 103 68.66% | 150 100% |

Table 11: Count

| Gender | Total |
|--------|-------|
| Lesion |       |
| Present | 92 61.33% | 26 17.33% | 118 78.66% |
| Absent  | 31 20.66% | 10 6.66%  | 41 26.33%  |
| Total   | 123 82% | 27 18%    | 150 100%   |

Table 12: Chi-square tests

|                    | Value | df | Asymp. sig. (2-sided) | Exact sig. (2-sided) | Exact sig. (1-sided) |
|--------------------|-------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | 6.098 | 1  | .014                  | .027                 |                      |
| Continuity Correction| 4.884 | 1  | .014                  | .027                 |                      |
| Likelihood Ratio   | 8.067 | 1  | .005                  |                      |                      |
| Fisher's Exact Test|       |    | .010                  | .008                 |                      |
| Linear-by-Linear Association | 6.057 | 1  | .014                  |                      |                      |
| N of Valid Cases   | 150   |    |                       |                      |                      |

*P* value 0.014, 0.014<0.05 significant, Association between lesion & gender.

Table 13: Crosstab count

| Age groups | 21-30 | 31-40 | 41-50 | 51-60 | Total |
|------------|-------|-------|-------|-------|-------|
| Lesion     |       |       |       |       |       |
| Present    | 61 40.66% | 34 22.66% | 18 12% | 5 3.3% | 118 78.66% |
| Absent     | 0 0.66%  | 14 9.3% | 9 6%  | 32 21.33% |
| Total      | 61 40.66% | 47 31.3% | 32 21.3% | 10 6.6% | 150 100% |

Table 14: Chi-square tests

|                    | Value | df | Asymp. Sig. (2-sided) |
|--------------------|-------|----|-----------------------|
| Pearson Chi-Square | 32.142 | 3  | .000                  |
| Likelihood Ratio   | 42.346 | 3  | .000                  |
| Linear-by-Linear Association | 30.021 | 1  | .000                  |
| N of Valid Cases   | 150   |    |                       |

*P* value 0.000, 0.000<0.05 significant, Association between age & lesion.
Table 15: Age groups * Chewing tobacco crosstabulation count

| Chewing tobacco | Age groups | Non chewers | chewers | Total |
|-----------------|------------|-------------|---------|-------|
|                  | 20-30      | 29 19.33%   | 32 21.3%| 61 40.66%|
|                  | 31-40      | 5 3.33%     | 42 28%  | 47 31.33%|
|                  | 41-50      | 8 5.3%      | 24 16%  | 32 21.3%|
|                  | 51-60      | 5 3.33%     | 3 3.33% | 10 6.66%|
|                  | Total      | 47 31.33%   | 103 68.66% | 150 100%|

Table 16: Chi-square tests

| Value | df | Asymp. Sig. (2-sided) |
|-------|----|-----------------------|
| Pearson Chi-Square | 19.019* | 3 | 0.000 |
| Likelihood Ratio   | 20.399  | 3 | 0.000 |
| Linear-by-Linear Association | 2.332 | 1 | 0.127 |

P value 0.000, 0.000<0.05 significant, Association between age and smoking

Table 17: Chewing tobacco

| Chewing tobacco | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------------|-----------|---------|---------------|--------------------|
| Non chewers     | 47        | 31.3    | 31.3          | 31.3               |
| chewers         | 103       | 68.7    | 68.7          | 68.7               |
| Total           | 150       | 100.0   | 100.0         | 100.0              |

Table 18: Smoking

| Smoking | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Non smokers | 43        | 28.7    | 28.7          | 28.7               |
| smokers   | 107       | 71.3    | 71.3          | 71.3               |
| Total     | 150       | 100.0   | 100.0         | 100.0              |

Table 19: Lesion

| Lesion | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------|-----------|---------|---------------|--------------------|
| Absent | 118       | 78.7    | 78.7          | 78.7               |
| Present| 32        | 21.3    | 21.3          | 21.3               |
| Total  | 150       | 100.0   | 100.0         | 100.0              |

Table 20: Carcinoma

| Carcinoma | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------|-----------|---------|---------------|--------------------|
| Absent    | 149       | 99.3    | 99.3          | 99.3               |
| Present   | 1         | 0.7     | 0.7           | 0.7                |
| Total     | 150       | 100.0   | 100.0         | 100.0              |

Table 21: Leukoplakia

| Leukoplakia | Frequency | Percent | Valid Percent | Cumulative percent |
|-------------|-----------|---------|---------------|--------------------|
| Absent      | 141       | 94.0    | 94.0          | 94.0               |
| Present     | 9         | 6.0     | 6.0           | 6.0                |
| Total       | 150       | 100.0   | 100.0         | 100.0              |

Table 22: Erythroplakia

| Erythroplakia | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------|-----------|---------|---------------|--------------------|
| Valid         | 150       | 100.0   | 100.0         | 100.0              |

Table 23: OSMF

| OSMF | Frequency | Percent | Valid Percent | Cumulative Percent |
|------|-----------|---------|---------------|--------------------|
| Absent | 142       | 94.7    | 94.7          | 94.7               |
| Present| 8         | 5.3     | 5.3           | 100.0              |
| Total  | 150       | 100.0   | 100.0         | 100.0              |

Table 24: Candidiasis

| Candidiasis | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------|-----------|---------|---------------|--------------------|
| Absent      | 149       | 99.3    | 99.3          | 99.3               |
| Present     | 1         | 0.7     | 0.7           | 100.0              |
| Total       | 150       | 100.0   | 100.0         | 100.0              |

Table 25: Gender

| Gender | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------|-----------|---------|---------------|--------------------|
| Male   | 123       | 82.0    | 82.0          | 82.0               |
| Female | 27        | 18.0    | 18.0          | 100.0              |
| Total  | 150       | 100.0   | 100.0         | 100.0              |

Discussion

Early diagnosis is the key in the prevention of transformation of oral mucosal lesions into life threatening disease ‘CANCER’, hence the need of the study determines the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur.

78% of the study participants had an oral mucosal lesion which was contrasting according to a study by Andrej Aleksander Kansky et al, Shakir Mahmood Al-Gburi et al. and Sendhil Kumar et al. In the current study the age group most affected by oral mucosal lesions was 21-30 years (41%) where as in a study conducted by Kamla A et al. and Kaveri Hallikeri et al. it was more than 40 years.

The most common oral mucosal lesion in the present study was oral lichen planus (8.7%) while it was hairy tongue (17.4%), cheek biting and fordyces granules in studies conducted by Sami El Toun et al., Aleksander Kansky et al. and Daud Mirza et al.

The most common oral mucosal lesion in the present study was oral lichen planus (8.7%) while it was hairy tongue (17.4%), cheek biting and fordyces granules in studies conducted by Sami El Toun et al., Aleksander Kansky et al. and Daud Mirza et al.

In the current study the least affected age group was 10 years. In a study conducted by M Krishna Priya et al. and Ali et al. the least affected age group was 10-20 years in a study conducted by Daud Mirza et al.

In the current study the female participants were 18% which was more than in a study conducted by M Krishna Priya et al. and less than studies conducted by K. M. Shivakumar et al. and Ali-Riza-Ilker Cebeci et al.

The total number of study participants in the present study were 150 where as in studies conducted by José Nicolau Gheno et al. and Prashant N. Keche et al. were 801, 3500 and 255 respectively.
Conclusion
Oral mucosal lesions have a potential tendency to transform in oral mucosal malignancies which ultimately result in death. The present study concludes a positive relation between intake of tobacco in any form with oral mucosal lesions hence an additional effort to educate the masses about the hazardous effects of tobacco should be a priority for both governmental and non-governmental agencies.

Conflicts of Interest: None

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