

Perceived Stress in Leukoplakia and Oral Submucous Fibrosis

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ABSTRACT

One hundred cases clinically diagnosed with leukoplakia (LP) and Grade III oral submucous fibrosis (OSMF) each and those satisfying the inclusion and exclusion criteria were analyzed for psychological stress as perceived by the test used. The perceived stress scale is used to assess and summarize the severity of stress in 100 cases of Grade III OSMF and LP each. Statistical analysis revealed a majority of cases in their 4th–6th decade of life with a majority of men suffering from the aforementioned LP and OSMF. The perceived stress in cases of OSMF was higher than that in LP and this observation was considered statistically significant.

Keywords: Stress, Leukoplakia, Oral submucous fibrosis.

INTRODUCTION

The World Health Organization divided “pre-cancer” into two types – lesions and conditions and provided the definitions as:

A precancerous lesion is “a morphologically altered tissue in which oral cancer is more likely to occur than in its apparently normal counterpart”

A precancerous condition is “a generalized state associated with a significantly increased risk of cancer”.^[1]

Recently newer synonyms have come up to describe these and a minor difference has been highlighted. Pre-malignant or pre-cancerous conditions are considered as diseases where they will always get converted into oral squamous cell carcinoma (OSCC), while potentially malignant diseases are those which have the potential to get converted into OSCC. These are almost always associated with OSCC while pre-cancerous disorders may cause carcinomas of salivary glands, OSCC, odontogenic, Merkel cell, or even neuroendocrine type.^[2] LP has been defined as “a predominantly white, non-wipable lesion of the oral mucosa having excluded other well-defined predominantly white lesions clinically, histopathologically, or by the use of other diagnostic aids”.^[3] On the other hand, “Jens J. Pindborg in 1966 describes oral submucous fibrosis (OSMF) as “an insidious, chronic disease that affects any part of the oral cavity and sometimes the pharynx. Although occasionally preceded by, or associated with, the formation of vesicles, it is always associated with a juxtaepithelial inflammatory reaction followed by fibro elastic change of the lamina propria and epithelial atrophy

that leads to stiffness of the oral mucosa and causes trismus and an inability to eat.”^[4] It has also been defined as a “debilitating, progressive, and irreversible collagen metabolic disorder induced by chronic chewing of areca nut and its commercial preparations; affecting the oral mucosa and occasionally the pharynx and esophagus leading to mucosal stiffness and functional morbidity; and has a potential risk of malignant transformation.”^[5] The rise of substance abuse has now led to global prevalence of oral pre-malignant disorders (OPMD). A meta-analysis showed that OPMD is as prevalent as 4.47% globally with OSMF being as common as 4.86% and leukoplakia (LP) as common as 4.11%.^[6] If we consider the Indian scenario, a study showed that LP was seen in 36.7% and OSMF in 21.4% of the population with OPMD.^[7] Similarly a study conducted in Moradabad showed that 32.3% of cases had OSMF and 13.8% had LP.^[8]

Therefore, the effects of these conditions and disorders on the human body should be taken into account. Apart from the systemic issues created by these, the mental health issues should also be taken into account because mental health disorders can lead to deterioration of systemic health and vice versa as depicted in the diagram below.^[9]

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Therefore, keeping these statistics in mind, we performed a perceived stress scale test comprising of 10 questions (PSS-10) on 100 cases of LP and Grade III OSMF each.

MATERIALS AND METHODS

This prospective study was conducted on 100 cases clinically diagnosed as LP and the other 100 as Grade III OSMF at AMC Dental College and Hospital, Ahmedabad, Gujarat, India. Clinical diagnosis for LP was obtained based on the data provided by Carrard VC in 2018 along with an oral brush biopsy which proved it to be a leukoplakic patch not superimposed or in close proximity with any other white lesion of the oral cavity.^[10] Grade III OSMF was clinically diagnosed by the clinical and functional aspects of the classification proposed by Passi in 2017.^[11]

The 100 cases with LP were assigned Group L and those with OSMF were assigned O. Patients who refused to report for regular follow-up or refused to answer the questionnaire were excluded from the study. Subjects were given a PSS-10 questionnaire in a language, they were most comfortable with, and statistical analysis was performed on the collected data.

Mean values of all demographic and descriptive data were obtained using the universal methods of determining mean. The independent t test was used for the comparison of two independent groups to determine if there is statistical evidence that the associated population means are significantly different or not.

RESULTS

Based on the interpretation of the scored obtained on the PSS-10 questionnaire and the demographic data obtained by the patients, we hereby obtained the following results:

The mean age of cases with LP was 54.88 ± 9.19 years while for those with Grade III OSMF was 40.9 ± 10.09 years (Table 1). The gender predilection showed that majority of the cases with OPMD was males – 98% in L group and 90% in O group (Table 1). The mean stress score was 22.84 for Group L 24.80 for Group O (Table 2). In both the groups, the perceived stress was higher in males than females but this finding was statistically insignificant as the study itself

Table 1: The mean age and gender of cases with LP and OSMF

LP	N	Minimum	Maximum	Mean	Standard deviation
Age	100	34	74	54.88	9.19
Gender	M=98 (98%)	34	74	55.18	9.03
	F=2 (2%)	40	40	40	0.00
OSMF					
Age	100	22	70	40.9	10.09
Gender	M=90 (90%)	22	70	40.56	9.13
	F=10 (10%)	28	70	44	16.85

OSMF: Oral submucous fibrosis, LP: Leukoplakia

consisted of more males. Hence, to exclude gender bias, this finding was considered irrelevant. The comparison of perceived stress score reveals that Group O had higher perceived stress score than Group L and this difference was statistically significant ($P < 0.05$). This table also reveals that both the group had moderate category of stress according to PSS-10 scale (Table 3 and Graph 1). An interesting finding in our study showed the distribution of stress with age in Groups L and O. It showed that middle-aged cases in both groups experienced more stress as compared to those under 30 years and/or above 60 years of age (Graphs 2 and 3).

DISCUSSION

Ahire MS in 2021 performed a demographic study on 366 cases of LP and observed that the male: female ratio was found to be 7.5:1. Most of the patients were found to be in their 4th–6th decade of life.^[12] In our study, the findings coincided with the data of this renowned author. The majority subjects were males and the mean age also ranged in the 4th–6th decade of life.^[12]

Srivastava *et al.* in 2019 studied the prevalence and collected associated demographic data of 860 cases of OSMF in Kanpur and reported that 87.33% were males, 34.4% were in the age group of 30–40 years, and 34.66% cases belonged to Stage III OSMF.^[13] Our study specifically chose only cases of Grade III OSMF where the mean age was found to be approximately 40 years and 90% of the patients were males. The reason for these findings could be because of the skewed gender ratio in the area of study and since both the conditions are chronic, prolonged substance abuse that leads to a manifestation of the disease in the middle-aged group of adult life.

Sonule Sonal *et al.* in 2016 performed a study to evaluate stress using depression, anxiety, and stress scale and salivary cortisol in patients with oral lichen planus (OLP), OSMF, LP, and squamous cell carcinoma (SCC). Twenty-five cases of each disease were chosen and based on the data collected; the stress obtained was higher in cases of OLP and SCC as compared to OSMF and LP.^[14] No isolated study providing a correlation between psychological stress and LP has been recorded till date to the best of our knowledge.

Gondivkar *et al.* in 2018 performed the oral health-related quality of life on 206 cases of OSMF and found that the domains most affected were “psychological wellness” (82.35%) and “social wellness” (61.16%) The highest scores were reported in stage IV OSMF followed by Stages III, II, and I.^[15] This shows that OSMF not only impacts a human physically but

Table 2: The mean stress score

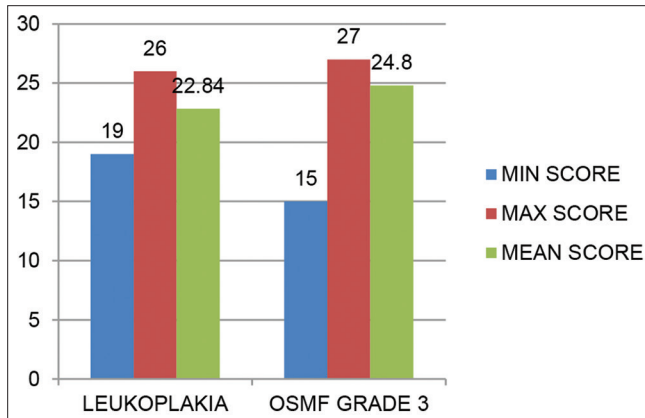
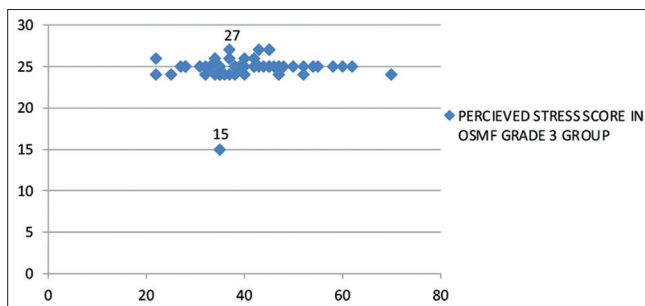
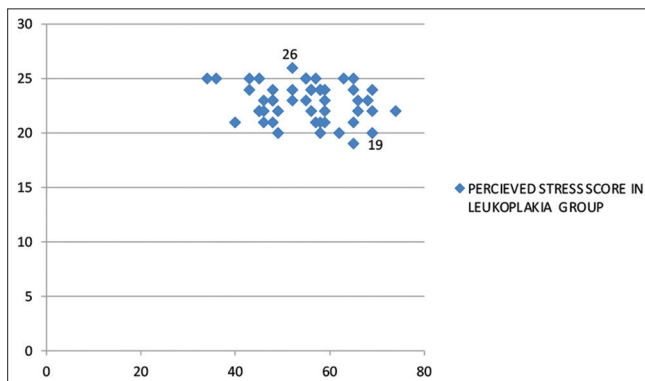
Groups	N	Minimum score	Maximum score	Mean score	Standard deviation
LP	100	19	26	22.84	1.698
OSMF	100	15	27	24.80	1.633

OSMF: Oral submucous fibrosis, LP: Leukoplakia

Table 3: The comparison of perceived stress score

Groups	N	Mean	Standard deviation	Mean different	t value	P value
LP	100	22.84	1.698	1.96	-8.32	0.001* (HS)
OSMF	100	24.80	1.633			

OSMF: Oral submucous fibrosis, LP: Leukoplakia

**Graph 1: The comparison of perceived stress score****Graph 2: Perceived stress score in oral submucous fibrosis Grade 3 group.****Graph 3: Perceived stress score in the leukoplakia group**

also mentally and therefore mental health should be taken into consideration during its management. However, in our study, we chose only Grade III OSMF cases and therefore the resultant scores were similar if no identical to the aforementioned study. Apart from these basic findings of mental health stress, we performed a comparison of the stress levels between Groups L and O and found that Group O has higher levels of stress. The

reasons for this are mentioned below: OSMF as a disease is more severe as compared to LP and has more debilitating clinical signs and symptoms, especially in its Grade III stage. The mean age obtained in Group O is lower than that of Group L hence colloquially, the participants of Group O have a longer life ahead of them which in turn makes them fear or worry about the outcomes in the future if the condition worsens. Hence, higher levels of stress can exist. No article has yet recorded the correlation between age and stress levels in any OPMD and hence we would like to bring awareness among the medical and dental fraternity regarding the same.

CONCLUSION

We hereby conclude that OPMDs are by large prevalent in Indian society and so are mental health disorders. It is no surprise that the rise of one is directly proportional to the increased incidence of the other. Therefore, in common conditions such as OSMF and LP, therapy and other forms of psychological intervention are essential so as to achieve good mental and subsequent physical health.

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